THE

DENTAL Digest

APRIL 1945

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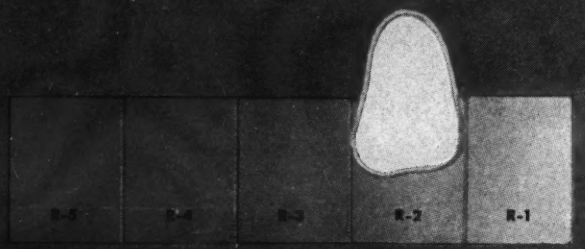

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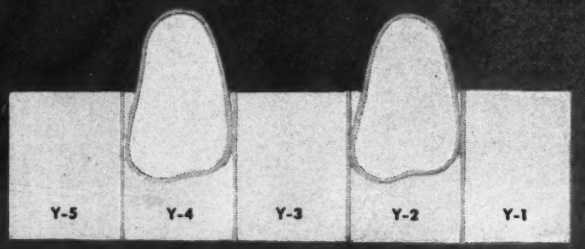

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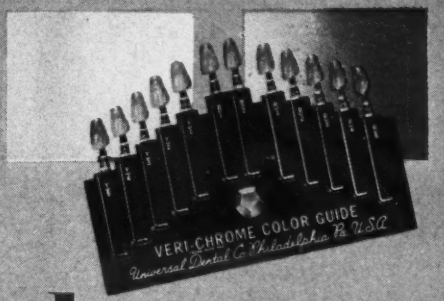

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THE DENTAL Digest

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About Our CONTRIBUTORS

I. A. Smothers (B.S., 1913, and D.D.S., 1916, Northwestern University Dental School) is in general practice. Doctor Smothers wrote for us in February 1936 on Compressed Cement Protection in Deep Cavities. He presents here the Indications for and Preparation of a MacBoyle Bridge Abutment.

James Mark Prime, D.D.Sc. (Creighton University College of Dentistry, Omaha) is the author of numerous articles. Doctor Prime has a general practice with special attention to preventive dentistry. He answers in this issue the questions most often asked of him by dentists regarding the use of ammoniacal silver nitrate.

Major William O. Vopata (DC) AUS received his D.D.S. from Northwestern University Dental School in 1931. He was in general practice in Oak Park, Illinois, before entering the Service. Major Vopata suggests the use of the electrosoldering machine in constructing wrought-wire partial dentures.

Newman D. Winkler, D.D.S. (Columbia University, 1924) is a general practitioner. Doctor Winkler has written several articles for The Digest on the use of acrylic, the last in February 1944 on Reinforced Acrylic Crowns. This month he discusses the use of Impregnated Gauze Drains.

Gregory B. Salisbury, D.D.S. (Temple University, School of Dentistry, 1934) emphasizes jacket restorations in his general practice. Doctor Salisbury wrote for us in January, February, March, and June of 1943, August 1944, and January 1945 on direct acrylic restorations. In this issue he discusses Modern Trends in Dental Acrylics.

Indications for and Preparation of a MacBoyle Bridge Abutment

I. A. SMOTHERS, D.D.S., Evanston, Illinois

To visualize the MacBoyle abutment, think of a shoulderless three-quarter crown with the cusps projecting through it and involving the mesial surface, half of the buccal surface, and half of the lingual surface.

Advantages

1. Retention is positive and lasting.

2. There is little chance of future complication by caries.

3. Much tooth structure is conserved and there is little chance for pulpal complication.

4. The tooth is strengthened by the casting.

5. The preparation is simple.

6. Correct occlusion is obtained quickly and generally without the need of models because all the natural cusps are present on the die to give sufficient guide to occlusion.

Indications

1. For all normal molars, upper or lower, with or without restorations. The ideal abutment tooth is a sound molar, with neither caries nor restorations.

2. When restorations are present, they should be removed. Should undercuts or undue depth result from their removal, cement should be used.

3. For an extremely short bite, and for deeply and intimately intercusping molars.

Contraindications

1. When distal caries is present.

2. When a distal restoration is present.

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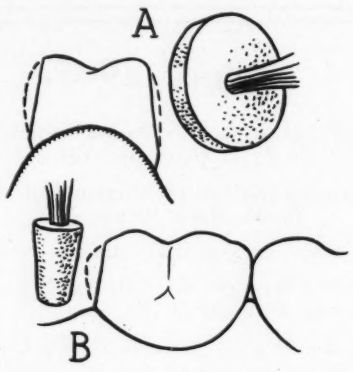


Fig. 1—Reduce the bell crown on the mesial surface and on the mesial half of the buccal and lingual surfaces. The preparation on these surfaces generally is carried distally to the lingual and buccal grooves. A slight taper should be obtained. Suitable diamond or carborundum stones are used together with coarse sandpaper discs.

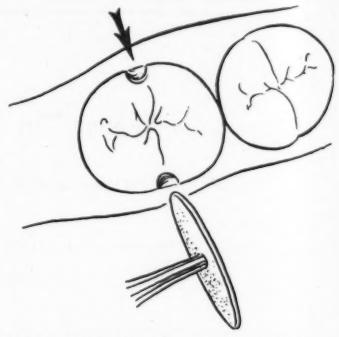


Fig. 2—Draw longitudinal parallel pencil marks on the lingual and buccal to assure parallelism of these cuts. Begin cutting the buccal and lingual slots with a separating disc, following the pencil marks carefully. Without this precaution the resulting cuts are likely not to be parallel.

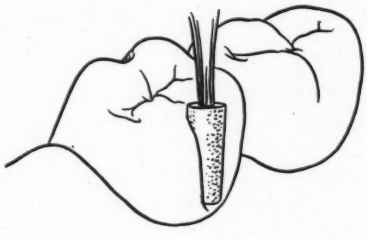


Fig. 3—Deepen the buccal and lingual slots with suitable diamond points or fissure burs.

Fig. 4—Cut a mesial slot similar to the slots shown in Figure 3. This slot should be wider than the other two, and should blend into the prepared axial surfaces with no sharp angles. It gives additional retention and additional strength by thickening the casting where the pontic is to be soldered.

Fig. 5—Connect the three slots over the marginal ridge and across the occlusal. Extend the occlusal groove distally to a surface free from pits and fissures. The occlusal grooves must be in the dentine.

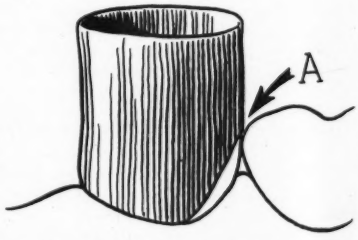


Fig. 6—Fit and contour a copper band over the prepared tooth. Trim the band at "A" to stop occlusal to the contact point.

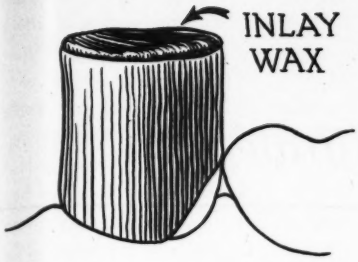


Fig. 7—Take an impression in inlay wax. This impression must be accurate. Note: The final wax pattern is to be carved from this inlay wax impression.

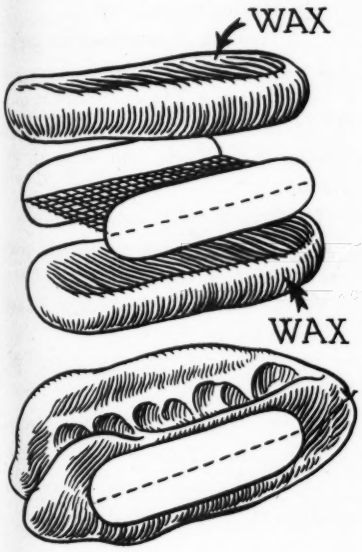


Fig. 8—Take a wax bite in a cardboard and gauze bite tray. Place a temporary filling, and dismiss the patient.

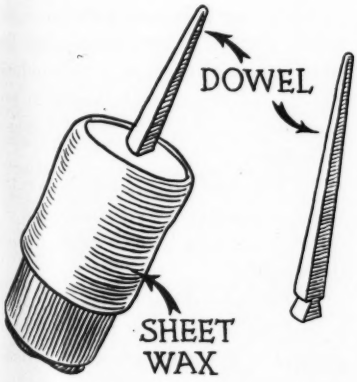


Fig. 9—Apply a layer of pink wax around the gingival end of the tube containing the inlay wax impression. The pink wax should extend about ½ inch beyond the tube. Lubricate the impression, and pour the model in artificial stone. Use a stiff mix, free from air bubbles. Set a metal dowel into the soft stone to aid in handling later.

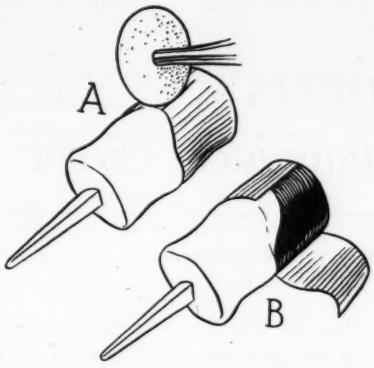


Fig. 10—(A) When the stone is set, use a thin separating disc or a fine file to cut the copper band through the distal side. (B) Peel the copper band away carefully from the inlay wax.

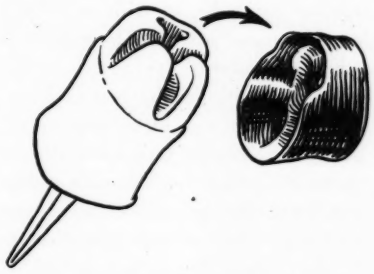


Fig. 11—Withdraw the lubricated impression from the stone die by jiggling it carefully. Lay the impression aside until it is needed again (Fig. 16). Produce a taper of the stone die with a coarse sandpaper disc.

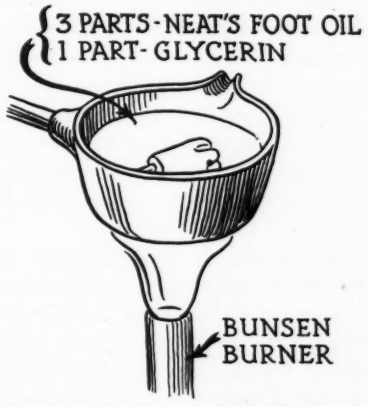
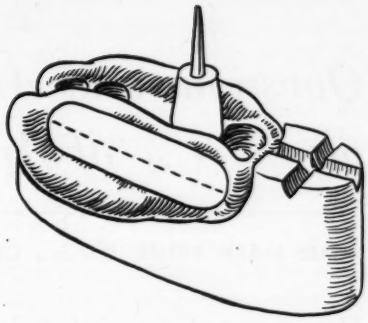


Fig. 12—The die must be well lubricated. This can be accomplished best by placing it in a solution of 3 parts neat's foot oil and 1 part glycerine which is brought just to a boil (do not overheat). The crushing and edge strength are increased greatly by this procedure. Remove the die from the solution and lay it aside for a few minutes for the excess oil to be absorbed.

Fig. 13—Pour a model of the opposing side of the wax bite (Fig. 8) in plaster or stone. When hard, set the stone die in place. Box with pink wax and pour the model.



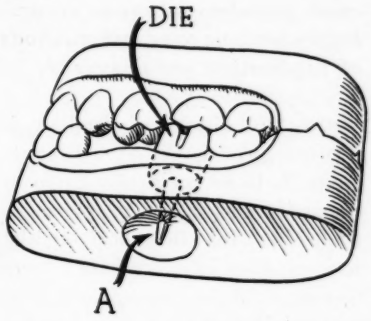


Fig. 14—Shows the occluding model with the die in position. Cut a recess at "A" for easy removal of the die.

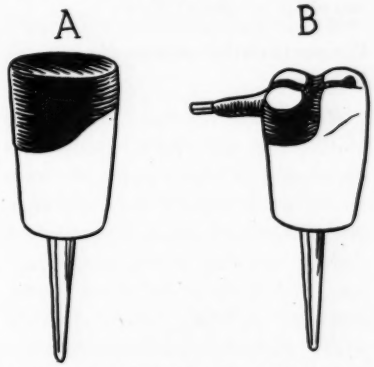


Fig. 15—(A) Replace the inlay wax impression which was laid aside (Fig. 11). (B) Carve the inlay wax to shape. Carving to outline is simplified by drawing the desired outline on the stone die with a fine pencil while the wax is removed. Attach a sprue former, invest in cristobalite investment, and cast at red heat.

Fig. 16—If details have been carried out properly, the casting will slip over the die quite perfectly and will slip over the prepared tooth in like manner.

Questions and Answers on the Use of Ammoniacal Silver Nitrate

JAMES MARK PRIME, D.D.Sc., Omaha, Nebraska

The characteristics of Howe's solution, ammoniacal silver nitrate, are discussed; and the most popular questions regarding its various uses and methods of application are answered.

WHEN THE history of dentistry is written, great credit should go to Percy R. Howe for having given us ammoniacal silver nitrate. When he wrote his first illustrated article[1] demonstrating how decalcified tooth tissues could be impregnated with finely divided silver particles, replacing the mineral salts dissolved out by the acids of caries, many dentists saw its great possibilities.

Characteristics of Howe's Solution

Howe's solution has proved to be a drug that fits almost ideally into the control of dental caries. We have known since Miller's[2] time that there are at least two active agents in the carious process, acidogenic organisms and their acids. Howe's solution has a high protein cleavage power, and acts on both the bacteria and their products to turn them into silver proteid. The solution is more alkaline than a saturated solution of bicarbonate of soda; hence the acids of the cavity are neutralized and their residue are made a part of the embalmed-like mass of silver proteid. Extracted carious teeth which have been treated and sectioned demonstrate how the solution will penetrate to the limit of the carious tissues and will stop when it reaches sound dentine. All this it does with no injury to the pulp. Its effect on the mouth biota is almost immediate.

The only disadvantage of Howe's solution is stain. This fault becomes, however, one of its many virtues; without it caries could not be detected in a cavity wall. All smooth surface caries begins with an etching on the enamel surface. The etching is white, the color of the enamel. It cannot be felt with the sharpest explorer, nor can it be seen in the best roentgenogram. Transillumination will not reveal the caries, but the stain resulting from the use of reducing ammoniacal silver nitrate will disclose it. Only where the surface is hidden by the approximating tooth will it not be apparent. Ammoniacal silver nitrate not only discloses the invisible etchings but arrests their progress for as long as ten years if used in repeated treatments on the teeth.

The intelligent use of Howe's solution has been and is, in increasing measure, of tremendous value in the care of the teeth of our men in the armed forces. It is regrettable that a better understanding of its uses has not been more general among the dentists in Service inasmuch as it lends itself well to mass dentistry.

So valuable is Howe's solution in the practice of modern dentistry that it is inconceivable that a man should attempt the care of his patients without it. We often wonder if there is a dentist, if he used it understandingly for a few months, who would abandon it for any considerations.

For what purposes can Howe's solution be used?

1. Caries prevention.
2. Arresting caries by neutralizing the acid in the carious cavity.
3. Sterilization of cavities.
4. Treating periodontal disease.
5. Removing overlying gum flaps.
6. Disclosing etchings.
7. Treating hypersensitive gingival surfaces.
8. Treating Vincent's infection.
9. Sterilizing diseased gingival tissues immediately before tooth extraction.
10. Treating dry sockets.
11. Treating exposures of pulp preparatory to capping.
12. Treating gingivitis and bleeding gum tissue.
13. Disclosing and arresting fissures.
14. Sterilizing root canals before inserting the fillings.
15. Cauterizing gum tissue for making class V restorations.

What is the most effective method of applying Howe's solution to proximal surfaces for disclosing etching and arresting caries?

After using cotton rolls and the saliva ejector, I have found that the most practical method is to combine the use of Howe's solution with my operative work by the following technique:

1. The first and most important thing to remember in ensuring an effective treatment is to dry the surface thoroughly.

2. The next thing to bear in mind is that the caries must not have progressed to the point of cavity formation; this treatment cannot take the place of a restoration. If the caries is only on the surface, excellent results may be expected.

3. To apply Howe's solution in the most effective manner, the dam is applied to cover the teeth other than

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[1]Howe, Percy R.: A Method of Sterilizing and at the Same Time Impregnating With a Metal, Affected Dentinal Tissue, D. Cosmos, **59**:891-904 (September) 1917.

[2]Miller, W. D.: Presence of Bacterial Plaques on the Surface of the Teeth, D. Cosmos, **44**:425-446, 1902.

the one to be restored. While the tooth is being restored, the other teeth should be drying.

4. When the restoration is completed, the interproximal surfaces are flooded with Howe's solution. The surfaces are rubbed with a ligature, and eugenol is applied and rubbed in by drawing the silk tightly over each proximal surface. Dry all the surfaces with warm air for a minute or two.

5. The dam is now removed, and the restoration is tested for occlusion. Any conspicuous stain is removed with a rubber disc. Remove no stain unless it is objectionable; it will soon wear away in chewing and brushing.

How does one know when the tooth has been treated sufficiently?

Natural responses are depended on; for this reason no anesthetic is used with Howe's solution. The treatment cement is removed, and cold water or cold air is forced into the cavity. If the response is moderate and passes away almost instantly, the tooth is considered sufficiently treated. If the thermal change produces distinct pain which does not disappear instantly, another treatment is made. The time to elapse before the restoration is inserted is determined in the same way. *Time* is an important factor in ensuring a successful treatment.

Why should it be necessary to treat a tooth more than once, for months or longer?

It is the ability of the pulp to protect itself against injury that makes it possible to place a foreign body (restoration) in a vital tooth. Pulp recession and the laying down of sclerotic or secondary dentine are evidenced by almost every roentgenogram. Only by cooperating with nature may we succeed. This process requires time. Failure may result if haste is attempted. The orderly laying down of secondary dentine requires time. The intelligent use of Howe's solution reduces irritation from toxins and acids, reduces hyperemia, and gives the pulp an opportunity to carry on its protective measures free from irritating influences.

At what stage do you consider Howe's solution effective in arresting caries?

Howe's solution is only *partly* effective in arresting caries after the cavity is well advanced. All smooth surface caries begins with an etching. It is at this stage that Howe's solution has proved to be definitely effective. Much prejudice has arisen as a result of treating carious areas after a break has occurred in surface continuity. After this stage is reached, only a slowing of the carious process can be expected. If treatments in this stage are made thoroughly and as often as every three months, however, an arresting sufficient to justify the treatments will result. Furthermore, the sensitivity will be definitely reduced in cavity preparation.

Do you expect to save a pulp after the patient has had a severe toothache for two or more days?

Yes. We are able to save a large percentage of such teeth. We have treated many, and after years they have been found comfortable and apparently normal. Before we had Howe's solution, such teeth could not be restored.

Should Howe's solution be used in all cavities?

There is no good reason for using it if there is no carious tissue in the walls of the cavity. If the cavity walls are laid in sound dentine and enamel, there is no need for the solution.

Is it safe to use Howe's solution in deep cavities in the anterior teeth?

Yes; I use it routinely. Stain results, of course, but this is removed before the restoration is placed. Inasmuch as most anterior restorations are made with silicate, the stained tissue over the pulp is covered with an opaque cement to prevent it from showing through the silicate. If this is not done, the silicate will take on a bluish appearance. The usual treatment cement is inserted immediately following treatment. This, of course, is removed and all the stain except that over the pulp is removed before the permanent restoration is placed. The objectionable stains will show during the time required for treatment but no stains will remain after the final restorations are made.

Can gingival caries be arrested and not require restoration?

I have used the solution in many such cavities and they have not required restoration for years. The secret lies in removing the major part of the caries and in drying and thoroughly *rubbing* the solution into the bottom of the cavity. Heavy friction should be used likewise when the eugenol is applied for reducing. The treatment should be repeated two or more times a year. The only objection to this method of treatment is the resultant black cavity.

This practice should not be used routinely inasmuch as restorations are, of course, the better and safer method.

I have been unable to arrest caries in the sensitive gingival areas. Why?

The reason for this is that you are *not* using enough friction. Dry the surface and *rub* it with the tightly rolled cotton pellet dipped in the solution. Rub it until the surface loses its sensitiveness, then reduce by rubbing the eugenol in thoroughly. This method usually relieves the sensitiveness for as long as several months.

Which is applied first in a deep cavity, eugenol or Howe's solution?

Howe's solution will not injure the pulp if applied first. It is usually applied first in any cavity, even if the pulp is exposed. If the eugenol is applied first, it fills the interstitial spaces and prevents the Howe's solution from penetrating as deeply as is desired.

Is it safe to place an amalgam restoration immediately after treatment with Howe's solution?

No. All cavities in which this

treatment is indicated have caries in the walls. The solution must be given time to penetrate this carious tissue. It is usually advisable to put temporary cement over the treatment for a few days or much longer. Inasmuch as amalgam must be placed in a dry cavity, placing it on a moist, freshly treated surface would be a mistake. Later it is determined if the tooth is sufficiently treated. The stain is then cut off the walls to prevent shadows, and the restoration is placed in a dry cavity.

Do you ever use a temporary stopping over a treatment with Howe's solution?

No. We get definitely better results when we use temporary cement. If a temporary stopping is used, one must expect a sensitive cavity.

Do you remove the eugenol before placing the treatment cement?

It is better to remove the surplus eugenol.

How can "blue" teeth be prevented following the placing of a restoration?

The blueness is the result of placing the restoration too soon after the treatment. Never make a treatment and a restoration at the same visit. It is assumed that caries has infiltrated the walls and penetrates the decalcified dentine slowly. This usually requires a day or more. If a large amount of decalcified tissue is present, more time is required. When the restoration is to be made, the dam should be applied and the stained tissue removed with a bur or chisel until *all* shadows disappear and the enamel resumes its natural whiteness. The black, hard tissue over the pulp should *not* be disturbed, but all other walls should be freed of the stain.

Removing cement from near the pulp is painful. How do you avoid having to cut the cement off this sensitive wall?

Place a piece of cotton saturated with eugenol over the sensitive wall and press it down with a pellet of dry cotton so that the saturated cotton will lie on this wall and not get mixed with cement. Then flow the cement over the cotton, being careful not to get it mixed in the cement. When the cement is removed, it lifts the cotton off the wall and no cutting or scraping is necessary. We have found that the cotton is free from any odor, except that of the eugenol, after it has been under the cement for months.

Should carious deciduous teeth be allowed to remain in a child's mouth as space retainers?

This must be decided by each dentist. The age of the patient is a factor. If the teeth are vital and the dentist chooses to neither restore nor extract them, Howe's solution may solve the problem. Teeth oftentimes may be kept by this treatment until they are normally exfoliated. A number of treatments are usually required. Unless the operator understands this and is willing to make repeated treatments, it is much safer to restore the teeth. Cases have been reported in which not a pulp was lost when repeated and thorough applications of Howe's solution were made. My own experiences compel me to admit that this is an unusual case, one in which the treatment was started when the cavities were small.

How are stains removed from checks in the enamel?

I know of no method of getting the stain out of enamel checks. They often are not conspicuous so they can be disregarded. It is unfortunate if they are in plain view inasmuch as there is no way in which they can be removed. The enamel around a foil restoration should be dried thoroughly and examined before the silver nitrate is applied; if checks are present, silver nitrate should not be used. Likewise, the stain cannot be removed from the cement margins around porcelain inlays. If enamel checks and the cement margins on porcelain inlays are covered with petroleum jelly, staining will be prevented.

Can pits and fissures be satisfactorily immunized with Howe's solution?

They should be treated with the solution for its *disclosing effect*, but it is much better and safer to restore them.

What is the treatment if Howe's solution contacts the lips and face?

Every precaution should be taken to prevent this. The lips and skin near the mouth should be covered with face cream or white vaseline, and three or four thicknesses of cotton gauze are placed over the lips and face. If the solution gets on the dry tissues of the lips and face, however, one of the following is applied: Salt, if it is severe; and cotton dipped in a saturated solution of potassium iodide if not severe. Both should be kept on hand at all times.

Why is the tongue so seldom burned when Howe's solution is used?

The tongue is usually covered with a rather thick coat of mucus and saliva. The caustic property of the drug is dissipated in acting on the protein of these materials so it does not attack the tongue cells.

What can be done if the patient complains of a severe toothache after being treated with Howe's solution? Can it be prevented?

We all get these complaints occasionally. If the patient will endure the pain it usually passes away in about thirty minutes, after which the tooth becomes comfortable and in all probability will continue so.

Does Howe's solution always penetrate the pulp?

After having used Howe's solution for over twenty years in cavities of all sizes I can say that it does *not* penetrate the pulp. I have, moreover, treated and sectioned many extracted teeth and have found that the penetration of the solution stops when it reaches normal dentine.

Will the solution devitalize the pulp?

This is a matter about which there has been much unfounded fear. Those

who have used it extensively find that it seldom, if ever, injures the pulp.

Why do you use Howe's solution in treating periodontitis?

Common sense dictates that it is a poor policy to inject an anesthetic into such highly infected tissues as are found in and around periodontal pockets. No good surgeon would do this if it could possibly be avoided. Furthermore, it is certainly contrary to recognized surgical principles to operate on these highly infected tissues. A serious experience in my practice brought this forcibly to my attention. I have since used what may be called "chemical surgery" for removing this tissue. The chemical method coagulates the tissues and, in a measure, protects the blood stream from contamination. This method, moreover, makes unnecessary the use of anesthesia or the surgical pack.

In treating periodontal pockets with Howe's solution, is it sufficient to carry the solution to the bottom of the pocket?

No; this is not sufficient. The intention is to destroy the pocket by coagulating the tissue. This requires considerable friction or rubbing, and often requires repeated applications. If this fails to destroy the pocket, it may be necessary to insert a pack of cotton saturated with Howe's solution. This may be left in place for a day or two without bad results.

Should the periodontal pocket be dried before it is treated?

Cotton rolls are applied on each side of the teeth, and most of the saliva is removed before the solution is applied. If saliva is present in the pocket, it seems to do no great harm.

What treatment do you suggest if the cementum is sensitive to thermal irritation after the pocket has been removed?

I had this trouble when I first began using the treatment but have little difficulty now. The reaction takes place if the cementum was not rubbed enough in the treatment. If the cementum remains sensitive, it is well to dry it and reduce the silver nitrate with eugenol. This will stain the epithelial tissues, but the stain will disappear in a day or two.

In treating periodontitis, some tissues almost melt away while others resist the solution and cannot be removed. Why is this?

Some gingival tissues are made up of strong connective tissue and others are soft and coagulate easily. The soft tissues are attacked readily by the periodontal disease, while the tough tissues are more resistant to it. This is a good diagnostic symptom. You may be sure the soft tissue will present a progressive periodontal condition, rapidly spreading, while the tough, hard tissues will resist the disease so that it progresses slowly. This may not be due to the fibrous nature of the tissue, but may be the result of active stimulation from vigorous toothbrushing.

Disfiguring stains are often found around the necks of teeth after treating periodontal disease. What can be done to remove this stain?

Enamel, dentine, and cementum, will not stain unless they are dry and decalcified. The stain usually is a calcific deposit. It may, of course, be removed by scaling off the deposits and polishing. Stains in the enamel or dentine are usually shallow cavities which necessitate restoration.

At one time you advocated using cotton packs with Howe's solution. Do you no longer use this method?

I seldom use the packs except when repeated treatments fail to clear up the pockets. In these I occasionally use the packs. Gingivectomy is carried out in some of the more "stubborn" cases. Patients complained more of pain from the packs than they do when the cotton-wrapped instrument is used.

Have you used Howe's solution in treating dry socket?

Yes, I have used it frequently. I have used many other drugs for this purpose—phenol, the sulfonamides, and guaiacol paste with powdered aspirin. All seem to have merit but I prefer to use Howe's solution in a "stubborn" case. If much pain is present, guaiacol paste and powdered aspirin are used.

Do you use Howe's solution routinely in prophylactic treatment?

I use it almost routinely for patients past 25 years of age. A normal gingival sulcus is seldom found in patients of this age. It will be found that a stronger, healthier gingival sulcus will result when the solution is used. Furthermore, its use will facilitate the more thorough removal of the subgingival calculus, and will stop bleeding of these tissues. The solution is not indicated where the gingival tissues are firm and in a healthy condition. I use the solution in about 90 per cent of my cases.

Which drug do you prefer in treating Vincent's infection?

I have found Howe's solution to be the most effective. I use no other drug. Scaling is not attempted until the day following the treatment. Howe's solution is *not* reduced when it is used for this. A toothpick wrapped with a small amount of cotton is dipped in the solution and passed between all the teeth. A small pellet of cotton held in pliers is used in places such as the distal of the molars which cannot be reached with the straight instrument. These inaccessible places should be treated thoroughly inasmuch as the organisms find protection here, develop a high degree of virulency, and provide a "supply base" from which the tissues become re-infected. Overlying gum flaps are often the seat of re-infection by Vincent's organisms.

What is your technique for using Howe's solution around teeth, especially third molars, before extraction?

Infection is often forced into the alveolus around a tooth in the process of removal; therefore, the loose tissues around a tooth are thoroughly cauterized immediately before ex-

traction. This usually prevents a dry socket, and tends to protect the blood stream against contamination. This precaution is especially indicated in removing lower third molars.

The technique consists of thoroughly rubbing the tissues with Howe's solution on a pellet of cotton wound tightly and held in cotton pliers. Cotton rolls are placed on both the buccal and lingual sides of the tooth to prevent the solution from getting into the throat and on the buccal tissues. The solution is *not* reduced for this purpose.

Is there a loss of pH if Howe's solution is exposed to air?

We exposed it to air and sunlight for days and there was no diminution of pH. It is extremely volatile, however, and by this exposure becomes more concentrated in terms of silver nitrate, hence more caustic. It may be safe to use this solution in treating periodontitis or sensitive surfaces, but it should not be used if the pulp is exposed or almost exposed. A fresh solution should be used for these.

What is the rate of evaporation of Howe's solution as compared with a saturated aqueous solution of silver nitrate?

Howe's solution evaporates, when all conditions are equal, twice as fast as the aqueous solution of silver nitrate. This means that Howe's solution must be kept from exposure to air and sunlight as much as possible. Take from the stock bottle only what is required for each treatment and discard any that remains after treatment.

What is the strength of Howe's solution in terms of silver nitrate?

It is a saturated solution.

Do you ever use the plain silver nitrate crystals instead of Howe's solution?

I have tried the plain crystals but have found them less effective than Howe's solution.

Is the solution in ampules best?

It is possible to get the solution in a colored, screwtop, dropper bottle when large quantities are used. For the average operator, however, sealed ampules are better; the solution will keep indefinitely in these amples.

Should Howe's solution have the pungent odor of ammonia?

If the solution does smell of ammonia, it is evidence that too much ammonia is free in the solution; the the solution has not been properly compounded.

Why do you use eugenol instead of formalin for reducing Howe's solution?

Because it gives a more complete reduction than formalin, and is not injurious to the pulp.

Is the solution reduced or precipitated?

The solution is reduced, not precipitated.

What are the hydrogen ion concentrations of eugenol, Howe's solution, and a 10 per cent solution of formalin?

The pH of eugenol is 4.1, that of Howe's solution is 8.5 to 9.5, and that of 10 per cent formalin solution is 3.8.

What is the principle objection offered to the use of Howe's solution?

Stain is perhaps the greatest objection. Another is fear that it will injure the pulp or that it will injure the gum tissue. Both of these objections have been proved to be groundless.

1136 *Medical Arts Building.*

Inadvertent Injection of Sodium Pentothal into An Artery

Although the inadvertent injection of sodium pentothal into an artery has not been recorded by medical officers of the United States Army, a few instances of this error have been observed by the British. The following note of warning, extracted from a British report, should interest medical officers whose duties include the performance of venipuncture for the administration of this anesthetic agent:

Inadvertent injection of pentothal into an artery has more than once given rise to gangrene of the hand and fingers. The mistake may occur in one of two ways:

1. An aberrant ulnar artery running between the skin and fascia may be mistaken for a vein.

2. During the search for a vein in the plump antecubital fossa the needle may pass too deeply and enter the brachial artery.

To obviate such a serious mistake, it is recommended that: (1) The color of the blood should be carefully observed before injection starts; and (2) a pause of a few seconds should be made after injection of a minute quantity of pentothal. If no pain occurs, it may be assumed that an artery has not been penetrated.

—From News and Comments, *Bulletin of the U. S. Army Medical Department*, 86:32 (March) 1945.

Electrosoldered Wrought-Wire Partial Dentures

Major WILLIAM O. VOPATA (DC) AUS

A partial denture is a machine; its degree of perfection depends on the method of its fabrication, from blueprint to insertion. No step in its development can be overlooked as unimportant. The most direct method of construction should present the least amount of error and ensure the best result at minimum cost. For these reasons the use of the electric soldering machine is presented along with a few suggestions regarding other steps in partial denture construction. The advantages of electrosoldering are:

1. The pieces are held firmly in place on the master model and must stay there while being soldered.

2. The result is always visible, and correction, if necessary, may be accomplished readily.

3. All parts of the gold appliance can be joined together to form a chassis which aids in flasking and increases the strength of the denture.

4. Access to parts of the denture that ordinarily are difficult to solder becomes amazingly simple.

5. The physical properties of the wrought wire are not "burned out" by gross application of heat.

6. A minimum of thermal expansion and contraction takes place.

7. Pits and flaws are almost never found in the finished denture.

8. A minimum of finishing and polishing is required.

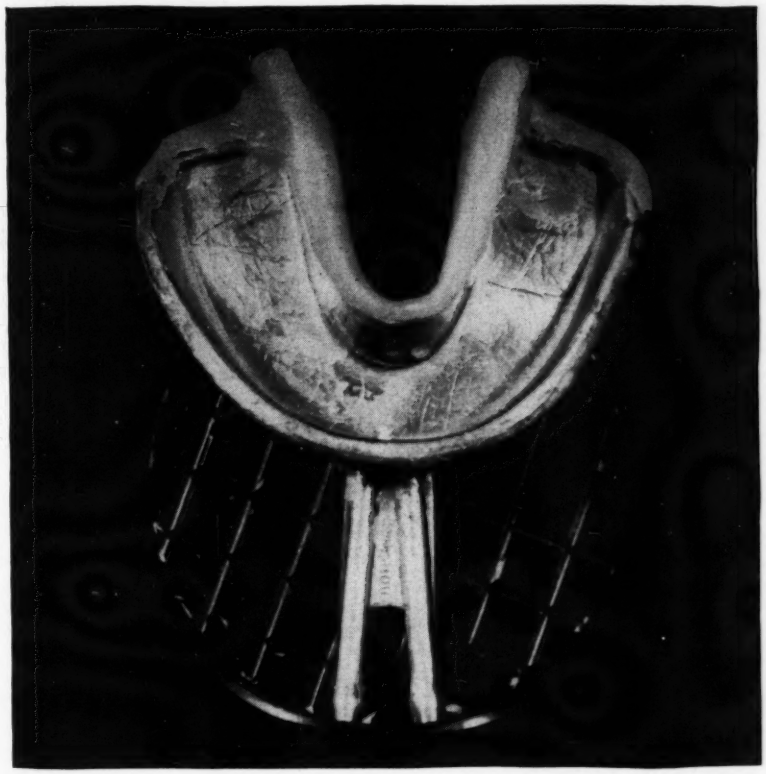


Fig. 1—Tray with soft wax to build up flanges for taking an impression for partial dentures.

Impression Technique

Modifying carefully selected trays with soft wax to build up flanges or vault areas should be the first step in taking the impression (Fig. 1). A quick deliberate procedure by the operator will help to overcome apprehensiveness in the patient, and, assuming that the alginates are to be used for impression material, rapid setting induced by a small amount of retarding powder or warm water will do much to control gagging. This is important because an impression taken with difficulty under conditions in which the patient is trying to swallow saliva will hardly be accurate and free from distortion. One minute in the mouth is all the time that is necessary for taking an alginate impression.

Making the Model

1. Assuming that two satisfactory impressions are finished, the overextensions can be trimmed away from the finished denture by trimming the impressions to ensure neat, compact models on which to work (Fig. 2).

2. Boxing-in of the tongue area on lowers will prove to be advantageous (Fig. 3).

3. Treating the impressions in the chemical bath as suggested by the manufacturer will be necessary to provide a dense model surface.

4. Good models often can be articulated by noting abraded occlusal

Fig. 2—Trimming the impression removes overextensions and insures neat, compact models.

Fig. 3—Tongue area boxed in to aid in constructing the model.

areas and using them as guides. If extensive areas are edentulous, however, baseplates and wax rims should be made. The wax mush bite has no place in a technique to guarantee accuracy.

Inasmuch as the stone model will serve as a study model, a model upon which to construct and assemble the metal frame and finally for processing, it can be handled more conveniently off the articulator. Thus the models are not articulated until the teeth are ready to be set up.

Construction of Wrought-Wire Frame

1. The mechanical "surveyor" can be used first on the model to determine the "path of insertion," taking into consideration the position of both hard and soft tissues which would affect the placing of the completed denture (Fig. 4). Consider, as an example, a first bicuspid tipped lingually to a second bicuspid which is to serve as an abutment tooth. The lingual inclination of the first bicuspid must be taken into consideration when adapting the bar. Divergent teeth adjacent to edentulous spaces also offer a subject for careful survey.

2. In the absence of a surveyor, careful study of the entire model from some distance and at various angles will do just as well. Once the path of insertion is determined, the clasp outline for the abutment teeth can be determined either by surveying along this path of insertion or by examining it and marking it with a pencil just below the points of greatest convexity on the abutment teeth, then connecting these points with a line.

3. When these penciled lines are completed for the clasps and the bar, the clasp material must be bent to shape (Fig. 5). Sixteen-gauge to 18-gauge round clasp wire is used, with 17-gauge wire being preferable in most cases; 14-gauge half-round wire is used for the occlusal rests and retention lugs.

4. Retention lugs are formed and designed to attach to the clasps as near as possible to the occlusal rest.

This is the area of greatest stability in the clasp and the point from which the reciprocal arms are permitted to flex.

Theory of Electrosoldering

The electric soldering machine is mainly an electrical transformer, capable of taking line voltage at, for instance, 115 volts and 5 amperes, and converting it to 25 volts and 20 amperes. The passage of the low voltage, high amperage current through the carbon electrode produces heat at contact because of the resistance of the carbon to the passage of current through a small area of contact.

In adapting this principle to use in soldering, the metal object to be soldered becomes one of the electrodes when it is connected with the circuit. The carbon electrode is placed directly over the area to be joined, and, as the current passes through, it heats the carbon which in turn heats the metal and fuses the solder.

Technique

1. Now that all the clasps and the bar are formed (Fig. 6), they are held in place with a dab of plaster over separating medium (Fig. 7). A thickness of asbestos paper is placed under the retention lugs and the lingual bar terminals to permit acrylic to envelop them.

2. The electric soldering machine (Fig. 8) will now be used to assemble the clasps, lugs, and bars directly on the stone model. By placing the model on a mound of clay, or on a mechanical model holder, the force of gravity will aid in the flowing of the solder, and easier access to all parts of the frame will be possible. Modification of the metal electrode to the shape of a claw, or substituting a tweezer for the electrode, likewise will be helpful.

3. The claw, or tweezer, forms the contact electrode, and with it the loose lug, the occlusal rest, is held in place while the carbon (heat) electrode is applied over the fluxed solder and the area to be joined (Figs. 9 and 10). The low voltage current,

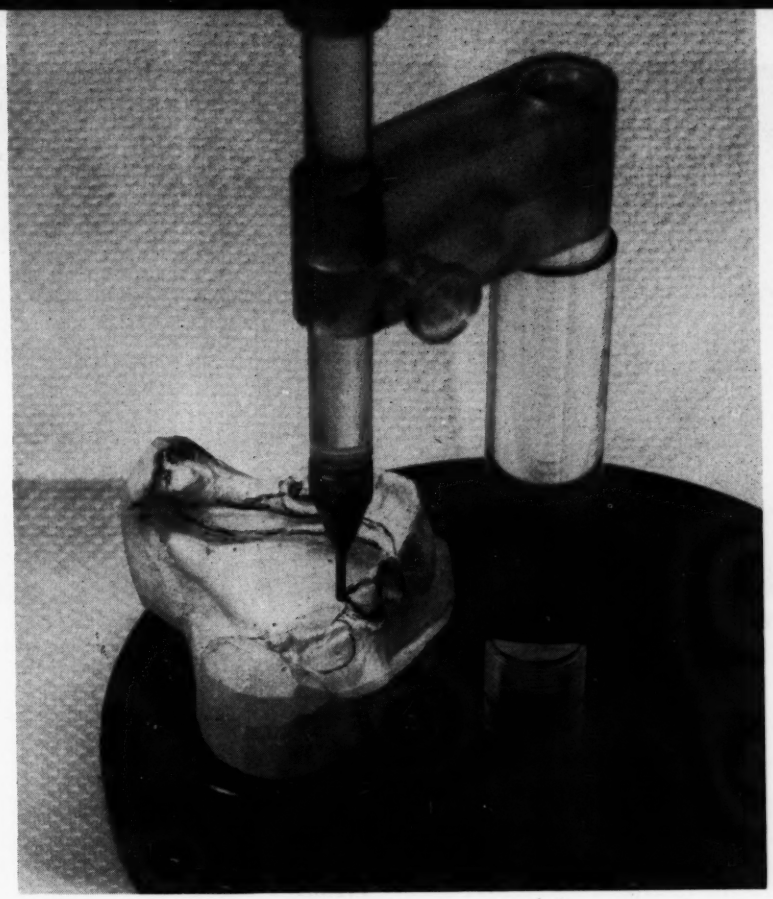


Fig. 4—Surveying the model for the path of insertion.

Fig. 5—Forming the clasp material to shape.

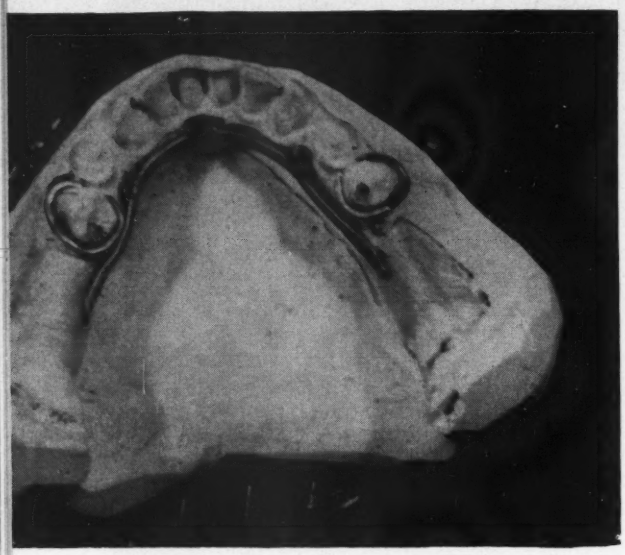


Fig. 6—Clasps and bar waxed in place previous to immobilization with plaster.

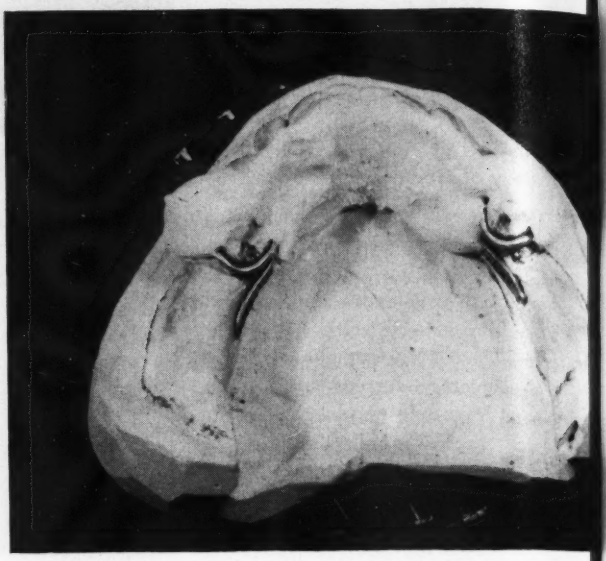


Fig. 7—Clasps and bar held in place with dab of plaster over separating medium.

which carries a high but regulated flow of amperage, converts the carbon electrode into a wand of electric heat that will melt the solder and weld it to the metal it is to join.

4. It is impossible to obtain an electric shock by careless handling of the electrodes. The carbon must be scraped or filed when dissipated flux fouls the contact end. Shaping it to a taper will give better control of the heat. All fluxes are not suited to electric soldering, but a wet paste flux will assure a good electrical contact and will facilitate the work. If more heat is required, as in joining heavy pieces, the machine can be adjusted to supply this need. Sixteen-carat gold solder seems easiest to work with but solder of a higher carat can be used; however, more heat will be required.

As the electric soldering machine is used, it is immediately apparent that the time-consuming investment-and-blowpipe method has been replaced by a cooler, cleaner, and quicker method of soldering.

Flasking

Inasmuch as there are no loose ends of gold floating in the wax model denture, it is best to draw off the

Fig. 8—The electrosoldering machine.

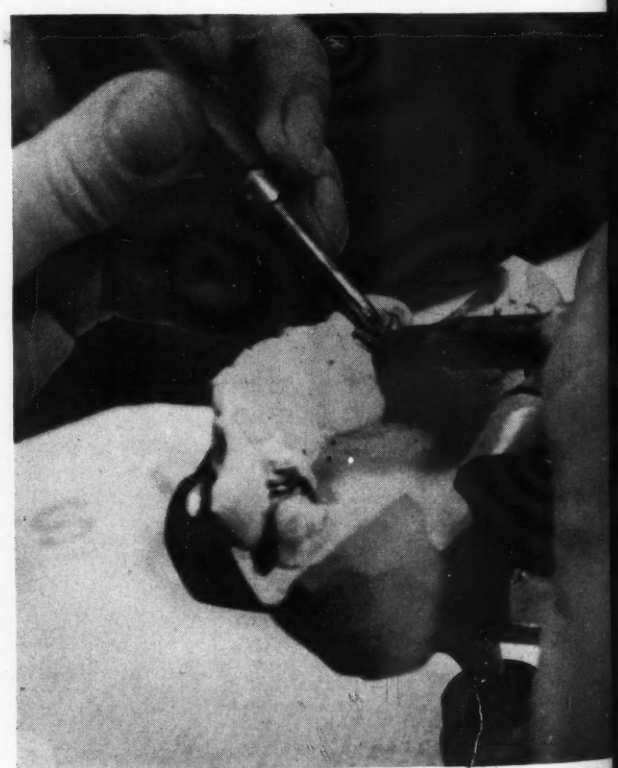


Fig. 9—Soldering the clasp wire on the stone model.

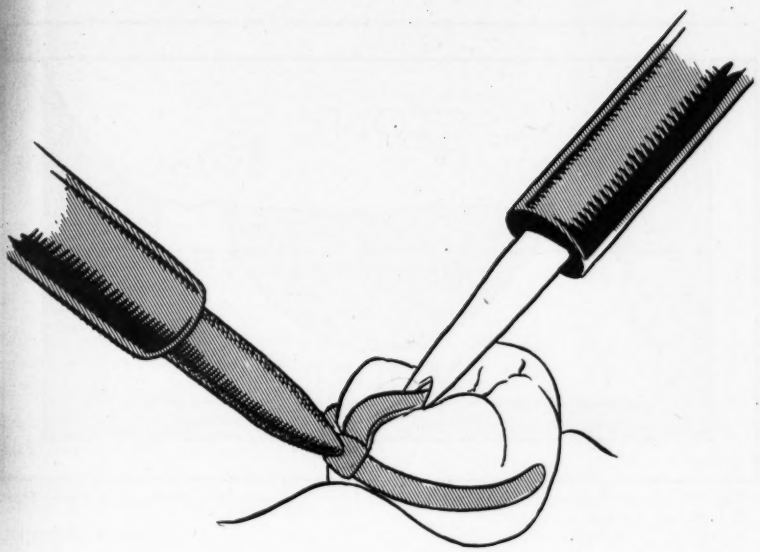


Fig. 10—Occlusal rest held in place with claw (contact electrode) while the carbon electrode is applied over the area to be joined.

Fig. 11 (left)*—Metal frame and teeth drawn off model together in upper half of flask.*

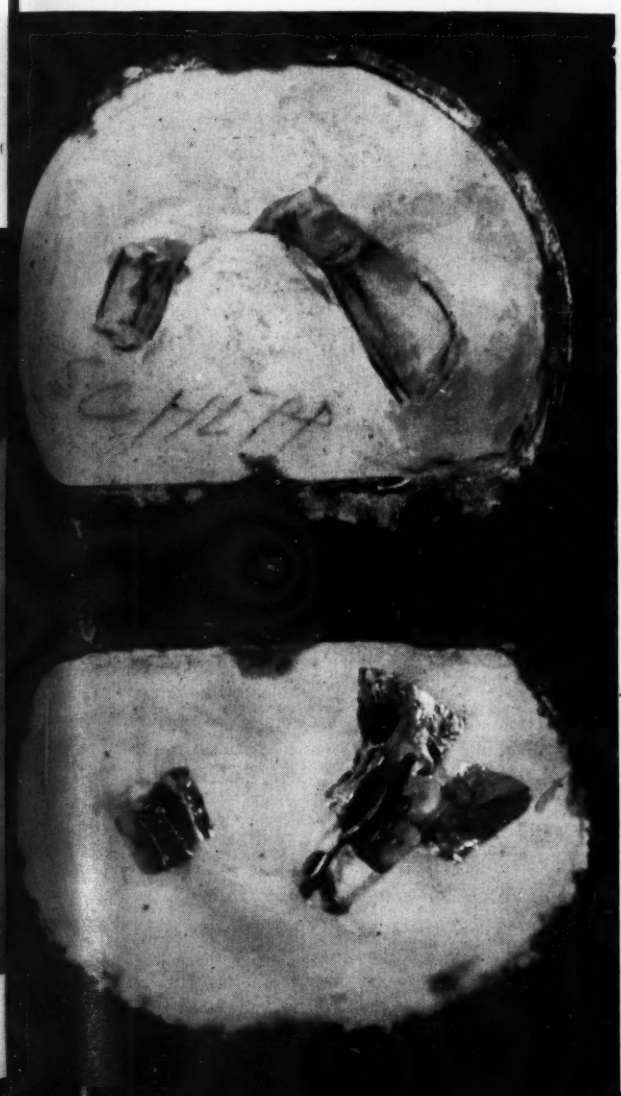
Fig. 12 (right)*—The case flasked and acrylic test-packed.*

gold with the porcelain teeth in the upper half of the flask (Fig. 11). This will permit test-packing of the base material (Fig. 12). Plaster is used for this purpose except for the stone bumper which covers the occlusal surfaces of the porcelain teeth to prevent their movement during curing (Fig. 13). The stone core has been poured over a separating medium and will separate readily on deflasking.

A plaster saw will be an aid in dividing the stone model to remove it from the processed case.

Repairs

If a dentist had no other use for an electric soldering machine, it would certainly pay him to have one to use in the repair of broken clasp arms. With this technique of soldering, a joint may be made safely within 1 millimeter of the acrylic base



material from a single impression taken with the denture in place in the mouth. With the case in the impression, a stone model is poured, and a new arm is built and soldered on this. All this can be done while the patient waits, if necessary; the denture base material will not be harmed in the least.

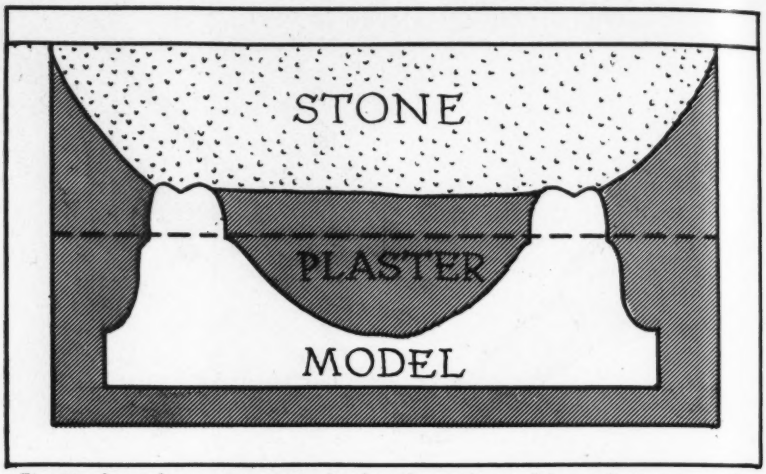


Fig. 13—Stone bumper covers occlusal surfaces of porcelain teeth to prevent their movement during curing.

Conclusions

A perfect-fitting wrought-wire partial denture of highest quality is now entirely possible (Figs. 14 and 15). Formerly it was thought that only an all-cast appliance could give the best in partial denture service. The satisfaction of placing wrought-wire partial dentures that fit well with almost no adjusting will more than compensate for the inconvenience caused by changing from an old-fashioned to a modern technique. The facility of an electric soldering machine in providing a quick, inexpensive repair to a broken clasp, whether of wrought wire, cast gold, or nonprecious metal, should earn for it a prominent place in every dentist's laboratory.

Fig. 14—Finished frame before mounting models on articulator.

Fig. 15—Finished lower wrought-wire partial denture.

Unsolicited Manuscripts Are Welcome

"When you have made an observation of value or reached a conclusion concerning the unusual, publish it. Avoid carrying unpublished knowledge to the grave!"—Sir William Osler.

Impregnated Gauze Drains

NEWMAN D. WINKLER, D.D.S., New York

The maintenance of effective and adequate drainage is a necessity in the treatment of infected wounds. Gauze drains saturated with hemostatic and bactericidal agents of various types have been found to be only as effective as the agent used.

Tyrothricin, a mixture of gramicidin and tyrocidine, has been found to be particularly suitable for impregnating gauze drains because of its strong bactericidal and hemostatic properties.

NEW FIELDS of exploration have developed with the advent of new wartime drugs, particularly the sulfonamides and penicillin. Bacteriostatic agents of great power and low toxicity are coming to the fore after extensive experimentation on the battlefronts. The vitamins, too, are extending themselves into the repair of mucous tissues, and new hemostatic agents are now being employed to great advantage. The latter can be applied to gauze drains for local application. The object of the gauze drain confines itself primarily to applying concentrations of drugs and to maintaining drainage of pus from infected open wounds until natural healing begins to take place.

One of the first necessities of surgery is the establishment of adequate drainage for all infected wounds. After drainage is secured, either by means of a fistulous opening or surgical intervention, it must be maintained for complete escape of the pus. This is usually secured by means of a rubber tube drain, a rubber tissue drain, or a gauze drain, depending on the size and nature of the wound. Deep wounds must of necessity be drained artificially by one of these means. The question now arises as to which of the new drugs can be adapted for impregnation of gauze for the best effect.

Iodoform Gauze

Iodoform gauze probably has been used most widely to date, but is objected to for use in the mouth because of its medicinal odor and disagreeable taste. Iodoform gauze does not possess antiseptic properties despite its high iodine content (96 per cent); ordinarily it is not even sterile. Iodoform decomposes easily; and when dissolved in alcohol, ether, or fatty oils, it liberates free iodine readily. The secretions of a purulent wound contain large quantities of fatty substances which dissolve iodoform, especially when air is excluded.

The products of bacterial activity are oxidized by iodoform and hence it acts as a deodorant. Its slightly irritating properties stimulate cell proliferation and reduce the migrating power of leukocytes. In the form of a 5 to 10 per cent moist gauze it is suitable for dressing foul-smelling ulcers, deep-seated pockets, and other such wounds.

Sulfonamide Gauze

Of the sulfonamide group, sulfathiazole has been found most effective for oral use. Combinations of two or more of this group were tried in gauze drains without startling results. By a process of elimination it was found that the impregnation of a gauze drain with 10 per cent sulfathiazole, moist, (5 milligrams per square inch on a ¼-inch gauze drain) was effective in most cases.

Ascorbic Acid Gauze

A ½-inch gauze drain impregnated with 30 milligrams of ascorbic acid per linear foot was found to be least effective.

Hemostatic Gauze

It was suggested that a hemostatic agent be incorporated with the gauze to control bleeding. For this purpose 2 per cent kephrine hydrochloride was added to a gauze drain impregnated with 10 per cent sulfathiazole. The effects of this agent were negative.

Tyrothricin Gauze

Tyrothricin and penicillin promise to become valuable additions to drugs used by local application as adjuncts to surgical therapy of oral infections. Both tyrothricin and penicillin are particularly suitable for local application because they inhibit or kill most strains of staphylococci and streptococci. Clinically, the bactericidal activity of tyrothricin[1] is due to the presence of gramicidin. Tyrocidine contributes to the solubility and stability of the active principle, gramicidin. Tyrothricin was found to exert a bactericidal effect on all gram-positive organisms.

In diluted strength of 0.1 per cent on gauze, tyrothricin is most effective for oral use when it is covered. Exclusion of saliva aids its bactericidal effectiveness. Comments from many

[1]Tyrothricin, an alcohol-soluble, water-insoluble substance derived from autolysed cultures of the aerobic, sporulating soil organism, *Bacillus brevis*, is an antibacterial substance of high selective activity against gram-positive organisms and, in addition, is moderately active against the meningococcus. Its use must be confined to topical application or instillation into cavities which have no direct communication with the blood stream. The antibacterial activity of tyrothricin is due to the presence of at least two active constituents, gramicidin and tyrocidine, which have been isolated in crystalline form. Gramicidin is the more active against gram-positive organisms, while tyrocidine is active against gram-negative organisms. For purposes of clinical application it appears both unnecessary and undesirable to separate the two factors. Tyrothricin contains from 10 to 20 per cent gramicidin and from 40 to 60 per cent tyrocidine. (From *Tyrothricin Concentrate for Human Use* by Sharp & Dohme, Philadelphia.)

surgeons on the use of this gauze have been most encouraging. The duration of its use in place can be cut down considerably over that of other impregnated gauzes. For example, in infected cases involving removal of impacted teeth, this gauze can be inserted for one or two days.

Characteristics of Tyrothricin—1. Acts as a hemostatic agent, increasing clotting time.

2. Affects bacteriostatic action markedly.

3. Nontoxic for local application.

4. Its bactericidal action usually reaches its maximum in four hours.

5. Can be made fairly stable (penicillin cannot).

6. More powerful than penicillin as a bacteriostatic agent.

7. Most effective in solutions under 33 milligrams per 100 cubic centimeters.

Comments

Gauze drains may be used for prophylactic use until normal granulation is started. The gauze drain can serve to keep the socket clean from food impaction, following the removal of impacted molar teeth, until normal granulation is started. A gauze drain should *never* be packed tightly into a wound; it should be folded upon itself. In wounds in solid tissues, the drains must be packed so as to allow granulation from the bottom up. When a drain is inserted into a wound, it is shortened from time to time as healing progresses until it is completely removed; otherwise it acts as an irritant and produces a sinus tract.

2488 *Grand Concourse.*

Glass Fibers as Acrylic Strengtheners

S. A. LEADER, L.D.S.

Preliminary Observations

Acrylic resin possesses a relatively low tensile strength, and for this reason fractures are common in partial dentures. Nylon filament and yarn have been used with only moderate success to overcome this defect because it has a low Young's modulus and extends considerably before its remarkably high tensile property can be effective.

Glass fibers, although possessing elasticity, have a high Young's modulus and require infinitely greater force than nylon or acrylic before they will extend.

Glass Fabric in Dentures

The material is available in the form of woven cord, tape, and fabric of varying thickness and may be incorporated in dentures in the following manner:

1. Flask the waxed-up model in the usual way and when ready for packing, cut the required length of the tape or cord, immerse in monomer, sprinkle it with polymer, and puddle it into the fabric which will soon become rigid as the paste dries. If placed on the model in the flask, while it is drying the glass will adhere to it and conform to the shape of the denture.

2. Several layers of tape may be superimposed, but some acrylic must intervene between each layer; the normal acrylic dough is not suitable for this purpose. It is far easier to apply monomer with a brush on each layer of glass fabric in place, sprinkle with powder, and then apply the next piece of fabric while it is still moist.

3. When three or more laminations have been produced in this manner, the mold may be filled with acrylic dough and tried out in the usual way.

4. After trial closure has been made and excess resin removed, a final strip of the tape is placed on the surface and covered lightly with a film of acrylic, using the wet brush and powder sprinkled as before.

5. The sheets of fabric are used in a similar manner and must be cut "on the cross" for deep palates to prevent folds or wrinkling.

6. The cord is most suitable for narrow lower partial dentures. It is a great advantage to impregnate and cover the material with sufficient acrylic resin to render it rigid before use.

7. The denture is cured in the usual way. Loose fibers of glass extruding from it may be disregarded inasmuch as they will be filed and polished when the denture is completed.

8. Strengtheners of this type may be prepared and kept in stock for use when required. They may be readily adapted to shape for each individual case by warming or by moistening with monomer.

—From *The Dental Gazette*, 2:255 (February) 1945.

We Can't Pay You, But—

No DENTAL author can ever be *paid* for a valuable technical or scientific article. The value of such material is above a monetary basis. In the preparation of a technical article, however, an author often expends money for drawings, photographs, models, or graphs. We would like to help defray some of these expenses.

Until further notice, THE DENTAL DIGEST *will allow* $25.00 *toward the cost of the illustrations provided by the author of every article accepted.*

If you have a constructive idea, an innovation, a new result of tried and proved experiment, put it down in writing, illustrate it, and send the material to: The Editor of THE DENTAL DIGEST, 708 Church Street, Evanston, Illinois.

We hope that you will accept this invitation!

The Editor's Page

MANY WOMEN suffer from premenstrual tension and distress. Freed[1] has indicated that 40 per cent of women have this syndrome. The distress averages about five days each month. The usual subjective complaints are nervousness, emotional instability, and a feeling of depression. The objective symptoms include distension of the abdomen, subcutaneous edema, and occasional gastro-intestinal disturbances such as vomiting and diarrhea. Some women have pronounced bleeding from the gingival tissues before and during menstruation. Dentists recognize this vicarious sign and usually attempt nothing in the way of treatment. Dentists are not, however, as well informed as they might be concerning the nervous and emotional phases of premenstrual distress. If they were they would plan some phases of dental treatment with proper allowance for the menstrual cycle. If 40 per cent of women show premenstrual tension signs, among which may be apprehension, fear, and irritability, it does not present an ideal setting for difficult dental operations.

This common and distressing syndrome is thought to be due to the increased secretion of estrogen by the ovaries. Along with the increased estrogenic secretion there is thought to be a retention of sodium in the tissues. Freed gives this explanation:

"This retention of sodium is associated with an increase in extracellular fluid, so that the swelling of the various tissues gives rise to the respective symptoms. Thus, edema of the intestine induces nausea, of the brain migraine and other neurologic symptoms, and so on. This concept is supported by the work of Thorn and others on water balance studies during the menstrual cycle and the success in treating patients with premenstrual tension by ammonium chloride, which reduces the amount of sodium retention and extracellular fluid of the tissues."

It has been thought for many years that excessive sodium retention produces irritability and depression. There have even been some people who have suggested that feminine lacrimation is an excellent method of sodium disposal, and that "after a good cry" a woman may actually feel physiologically better because of the loss of sodium. This theory seems plausible and may be based on sound physiological chemistry. High calcium levels, on the other hand, are thought to give the feeling of well-being and euphoria.

The methods of treatment of premenstrual distress are: (1) The use of ammonium chloride; and (2) the use of the male sex element, androgen, which is destructive to the female secretion of estrogen. Androgen is used in the form of testosterone by injection, or it may be administered orally in smaller doses starting seven to ten days before the onset of menses.

Once again the role of the dentist as a medical "suggestor" is emphasized. This discussion is *not* presented with the idea of suggesting that dentists attempt to prescribe for their patients' premenstrual distress. Many women who show the signs feel that it is their fate to be so accursed. Dentists see many such patients who may not be under the care of physicians and thus have an excellent opportunity to suggest that these periods of distress often can be relieved by suitable therapy. The dentist should be cognizant, entirely within his field of dental treatment, of such a syndrome as premenstrual distress, and should make an effort to plan difficult and exacting dental operations in periods when the woman patient is free from the strains and tensions of premenstrual distress.

[1]Freed, S. C.: Treatment of Premenstrual Distress, with Special Consideration of the Androgens, J.A.M.A., 127:377 (February 17) 1945.

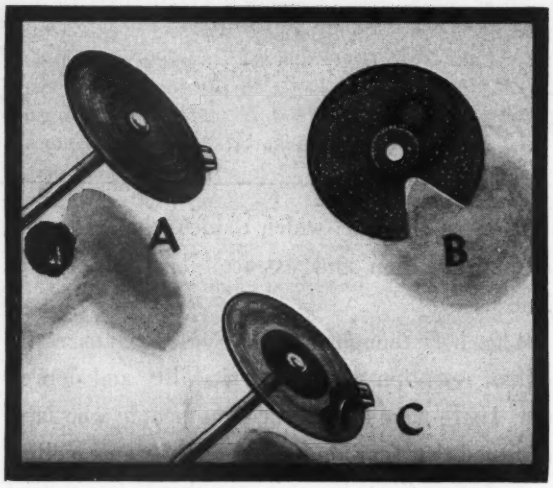


Fig. 1

Clinical and Laborator

A Disc that Permits Clear Vision While in Use

Edward Rappaport, D.D.S., Brooklyn

Fig. 1—(A) Disc being used in the usual manner. (B) Cut a triangular piece out of the sandpaper or carborundum disc. (C) When this disc is in use, it is possible to "see through it," thus keeping the object being polished in clear view.

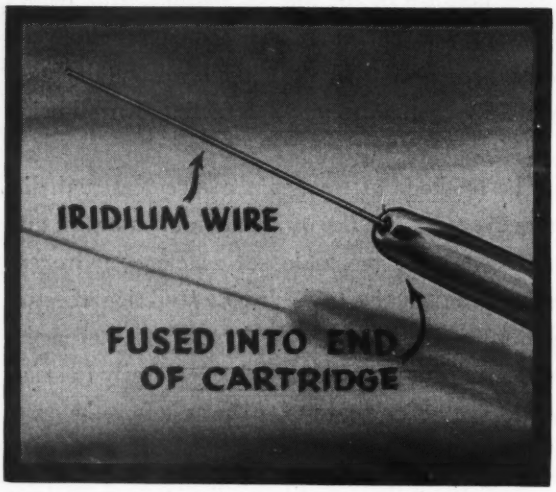


Fig. 2

An Efficient Soldering Aid

Lieutenant Leon N. Brams (DC) USNR, Fort Pierce, Florida

Fig. 2—A piece of iridium wire taken from a burned-out reflector type of light bulb is fused in the end of an empty procaine cartridge. This is accomplished by holding the end of the cartridge over the flame of a Bunsen burner or a blow torch until the glass fuses around the wire. The resultant instrument is superior to a slate pencil for use in soldering.

A Rubber Protector for the Contra-Angle Handpiece

Lieutenant E. C. Walter (DC) USNR, Iowa City

Fig. 3—A 3-inch piece of rubber tubing is placed in position over the finger grip of the handpiece. This will protect the fingers and provide a firmer and softer grip.

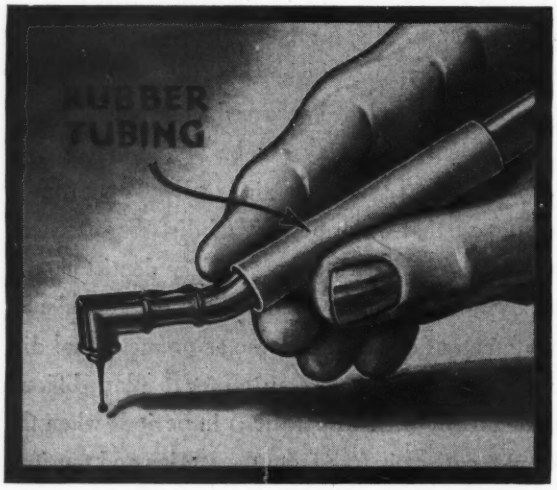


Fig. 3

Readers are urged to collect $10.00

FOR EVERY PRACTICAL clinical or laboratory suggestion that is usable, THE DENTAL DIGEST will pay $10.00 on publication.

You do not have to write an article. The fewer words the better. If you can furnish rough drawings or sketches, we will make suitable finished illustrations. This shouldn't take ten minutes of your time.

Send your ideas to: Clinical and Laboratory Suggestions Editor, THE DENTAL DIGEST, 708 Church Street, Evanston, Illinois.

SUGGESTIONS . . . .

Finishing the Gingival Margin of a Class II Amalgam Restoration

Captain Edward E. Johns (CDC), Camp Borden, Ontario

Fig. 4—A sandpaper strip is cut lengthwise, and one half is inserted between the preparation and the approximating tooth (A) with the sandpaper side toward the preparation. This is done before the matrix band is placed in position (B). After the amalgam is condensed, the band is removed and the strip of sandpaper is used to produce a proper gingival margin. This method makes it unnecessary to pass the sandpaper through the contact point after the restoration is in place.

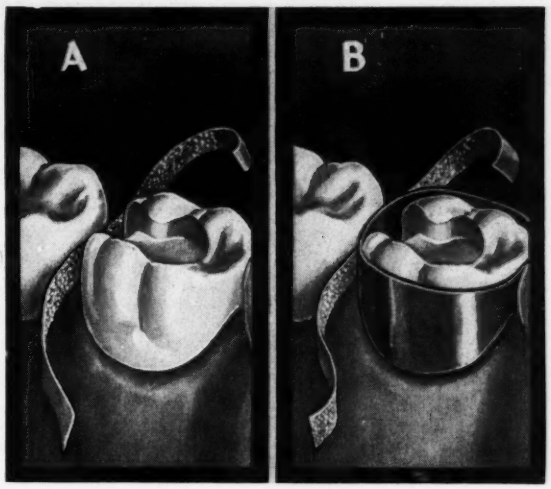


Fig. 4

Wax Pattern Adaptation Using a Rubber Dam

Chester J. Henschel, D.D.S., New York

Fig. 5—To assist in compression to secure proper interproximal adaptation of the wax pattern, a strip of rubber dam is knotted at one end, the knot is lodged in the interproximal area, and the rubber strip is carried around the tooth. The knot is placed at the buccal for posterior two-surface patterns: (A) At the distobuccal for a mesio-occlusal pattern, and (B) at the mesiobuccal for a disto-occlusal pattern. The advantage of this procedure is that only one end of the rubber dam need be manipulated by the operator.

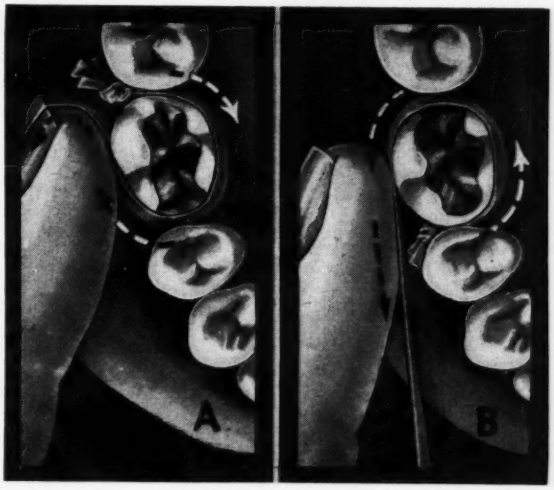


Fig. 5

A Helpful Procedure in Casting Occlusal Full Crowns

Earl H. Crary, D.D.S., Cando, North Dakota

Fig. 6—After the gold band is formed and contoured, a piece of thick paper is adapted to the top of the preparation and is placed inside the band to fit on top of the prepared tooth. Softened inlay wax is placed on top of the paper, a piece of rubber dam is placed over the wax, and the patient is asked to make the bite registration. After the wax is carved, the paper is removed. A crown constructed by this technique will go to place without adjustments.

(*Continued on page* 194)

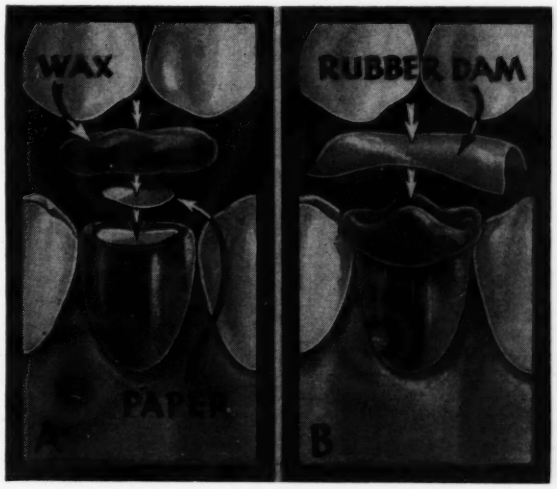


Fig. 6

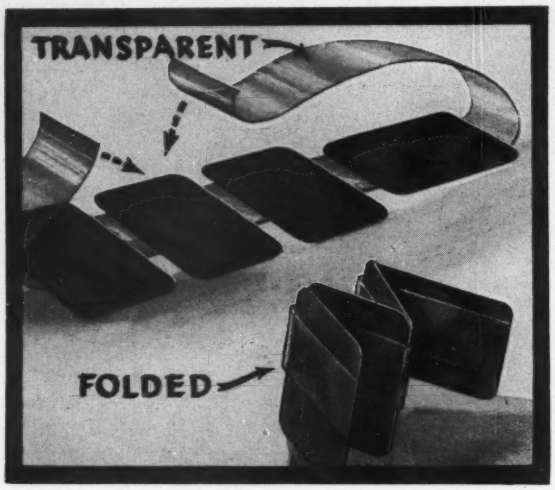


Fig. 7

A Method of Mounting and Filing Individual Roentgenograms

Myrton J. Billings, D.D.S., Brooklyn

Fig. 7—The individual roentgenograms are mounted in the desired positions on a long strip of cellulose tape, and the tape is folded over so that no sticky surface is exposed. Roentgenograms thus mounted can be folded over each other and filed away in a small envelope.

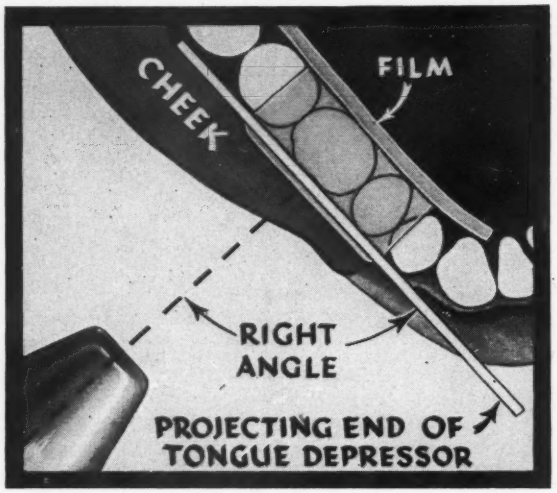


Fig. 8

Eliminating Overlapping of the Teeth in Posterior Bitewing Roentgenograms

Lee Alan Kapilow, D.D.S., New York

Fig. 8—The bitewing film packet is placed in position with the teeth in occlusion. A wooden tongue depressor is split lengthwise, and one half is placed in the vestibule of the mouth above the wing of the film and against the buccal surfaces of the teeth. The end of the depressor that projects from the mouth is used as a guide in the angulation of the tube. This technique ensures the correct horizontal angle, thus eliminating an overlapping of the teeth in the roentgenogram.

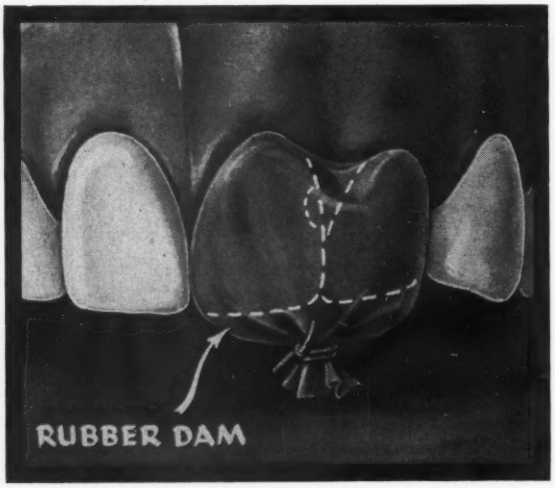


Fig. 9

Protection of Silicate Restorations

G. F. Roulston, D.D.S., Exeter, Ontario

Fig. 9—When silicate restorations have been inserted and lubricated with cocoa butter, the rubber dam may be released. Remove the excess rubber, leaving sufficient rubber to cover the tooth and the approximating tooth. Allow the loose ends to drop over the incisal edges, and tie them with a ligature. While the teeth are thus protected from saliva, the dentist may proceed with other operations in the mouth, being assured that the silicate will be protected.

SUGGESTIONS (*Continued from page 193*)

Removing Broken Root Tips

Cecil O. Garton, D.D.S., Inglewood, California

Fig. 10—Insert a sterile scaler in the empty tooth socket. Force the scaler through the septum and engage the fragment of the broken root tip to dislodge it. The loosened fragment can then be removed with ease.

Fig. 10

Adapting Wax for Gold Inlays in Class V Cavities

Clifford L. Gibbin, D.D.S., Rochester, New York

Fig. 11—(A) Heat the tips of college pliers, pick up the wax, and flow it into the cavity. (B) Lubricate a Caulk's tubular celluloid matrix of the proper size with cocoa butter, force it to place over the wax, and chill. Finish the carving, and sprue. This method assures proper contour of the wax pattern.

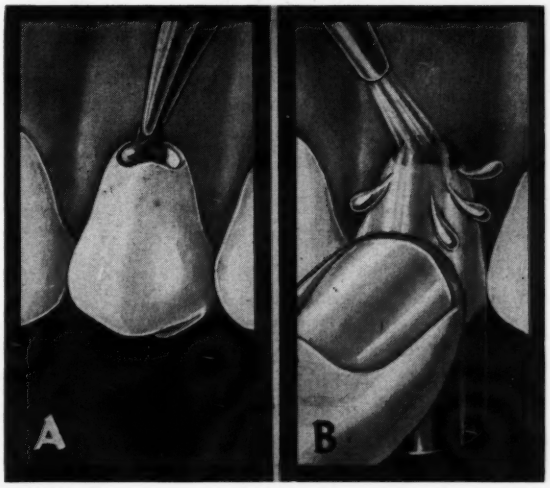


Fig. 11

Preparation of a Tooth for a Perfect-Fitting Jacket Crown

B. Gottheim, D.D.S., Brooklyn

Fig. 12—(A) The tooth is prepared in the usual manner with the shoulder under the free margin of the gingiva. (B) Trim a celluloid crown form, fill with soft gutta-percha, and press into position. Trim away the excess gutta-percha. (C) When the patient returns in a day or two, the gum tissue will be sufficiently retracted to permit further preparation of the shoulder. (D) When the shoulder is extended apically, the impressions may be made. Insert another crown form with soft gutta-percha to remain in the tooth until the jacket crown has been completed. (E) This method prevents a "cement line" from showing at the margin of the jacket and the tooth preparation, and is adaptable to all types of jacket preparations.

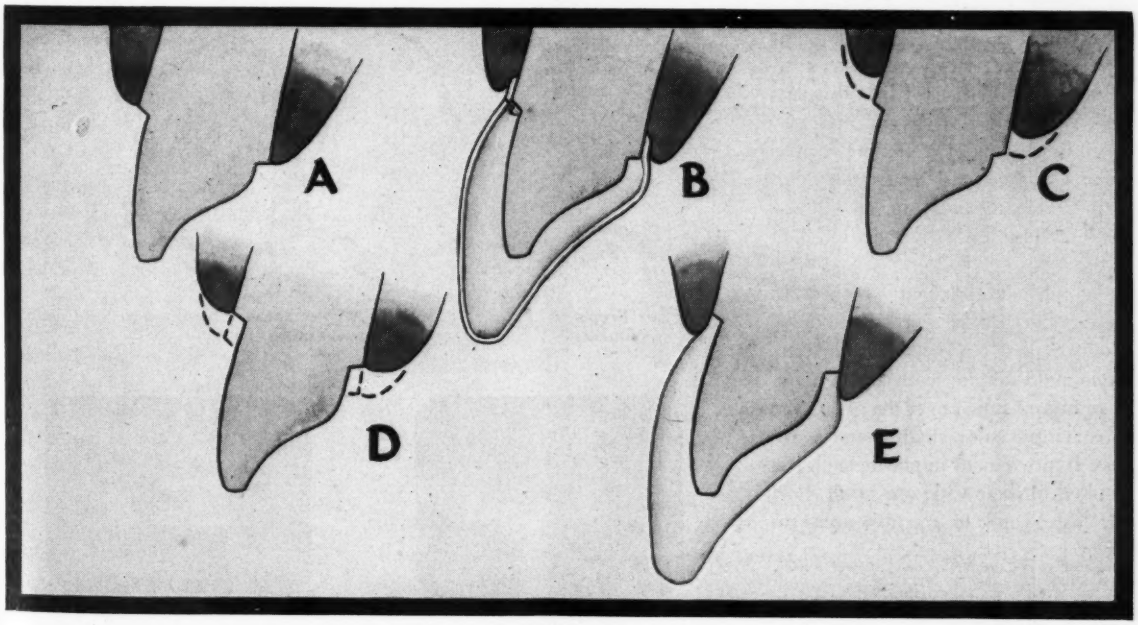


Fig. 12

*Modern Trends in Dental Acrylics**

GREGORY B. SALISBURY, D.D.S., Philadelphia

Both the composition of acrylic and its application have been improved so much in the last few years that failures no longer should be tolerated. The techniques used must be based on definite knowledge of the properties and limitations of plastics.

Reinforced acrylic restorations can be made foolproof. In case of breakage, pontics or crowns can be replaced without endangering the rest of the bridge.

Recent Developments in Acrylics

DESPITE THE abuse of acrylics, their intelligent use has been a great boon to modern dentistry. Termination of the War will release many acrylic combinations which will further advance their good features and eliminate some of their faults.

An acrylic which will not deform under prolonged boiling has been advertised recently, and many fine copolymers and new resins are being developed. Soft acrylics, such as acryvelum,[1] have been used in a thin layer over the regular acrylic in selected full dentures presenting sharp, spinous ridges and undercuts. This is not recommended in all routine cases because it possesses definite limitations.

Another development which is of great help in denture prosthesis is the production of improved plastic teeth. Cyclo-mold acrylic teeth are definitely an improvement over the older type in carvings, color shades, and hardness. Improvement in plastic teeth has resulted in their wide use in all short bite cases and in narrow areas to eliminate breakage which occurs so frequently in porcelain teeth.

There is a definite drift in partial denture construction back to the use of male and female attachments. The male is embedded in the acrylic denture; and the female, in either an acrylic gold veneer crown or an acrylic jacket, is processed over a thimble (Figs. 1 and 2).

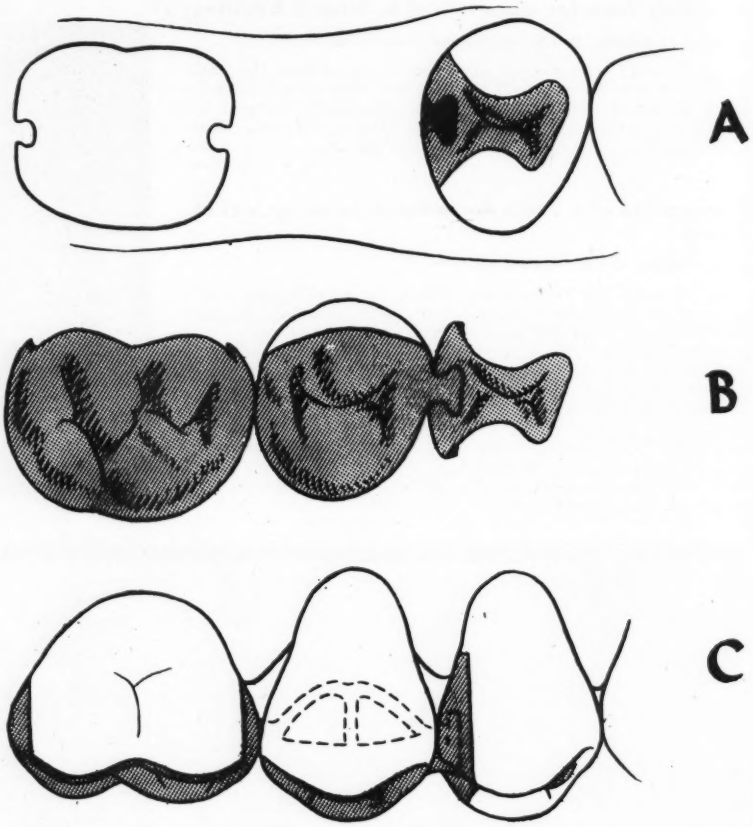


Fig. 1—(A) Prepared abutment teeth; (B) three-quarter crown, pontic, and male and female attachments; (C) bridge in place on abutments.

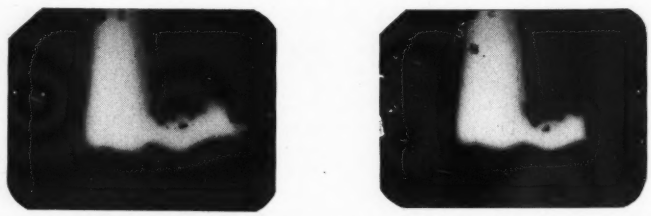


Fig. 2—Roentgenograms of bridge illustrated in Figure 1.

*Presented before the York County Dental Society, Pennsylvania, November 3, 1944.

[1]Tylman, S. D.: Resilient Resins: Technique for Their Use in Complete and Partial Dentures, THE DENTAL DIGEST, 50:204-209 (May) 1944.

Acrylic Inlays

Acrylic inlays, after a most unsatisfactory beginning caused by almost complete disregard of physics, chemistry, and mechanics, are being used again with success. This can be attributed to the careful attention given to the following precautions in cavity and inlay preparation:

Cavity Preparation — 1. Ample depth to insure proper thickness of acrylic.

2. Wide isthmuses, freedom from bevels, almost parallel walls.

3. Use of retention pits, pins, or grooves, or a combination of all three.

4. Precision and accuracy (as in making gold inlays), and elimination of crude short cuts.

Inlay Preparation—1. Adaptation of Williams gold mesh reinforcement to the pulpal and axial walls of the cavity. Williams mesh is adapted and cast in hard gold. Acrylic is processed over the gold mesh to provide greater strength and permanence of cementation.

2. Use of a platinum-foiled kryptex die, or a properly foiled copper-plated die. Acrylic must be processed on either of these dies.

3. Use of other dies, and inaccuracy in processing in plaster and stone and in removing the acrylic from the die, result in distortion and changes in the investment.

Acrylic Jacket Crowns

In acrylic jacket preparation several points must be stressed which frequently are disregarded to the detriment of the finished restoration:

1. Accurate preparation of the tooth, and the use of thimbles, pins, or dowels where abutments are broken down or the preparation is weak (Figs. 3 and 4).

2. Accurate dies, properly foiled with thin platinum foil (a copper or kryptex die is preferred). Carve the restoration with the die on the articulated model. A preformed acrylic veneer tooth or a plastic tooth may be used to obtain uniform carving, shade, and strength, especially when more than one jacket is needed. Foil the carving, and invest the original dies.

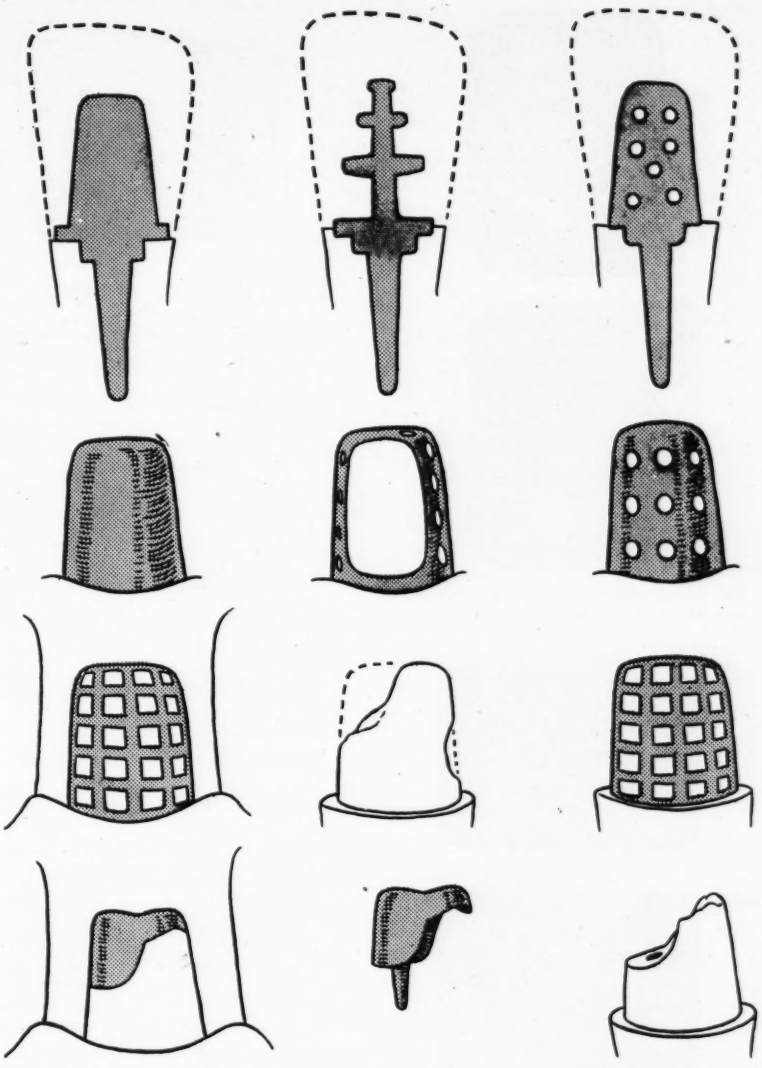


Fig. 3—Gold reinforcements for broken-down anterior teeth.

Fig. 4—(A) Broken-down upper central incisor; (B) gold core and pin; (C) stump built up.

3. When the halves are poured, allow the flask to set overnight if possible. Do not process a "green" investment.

4. Use no chemicals in removing the wax. Warm the wax, pick it out gently, and wash out the rest of the wax with boiling water. Do not soak the case in boiling water, and do not use colored waxes.

Fig. 5—Roentgenograms of reinforcement bars in bridges.

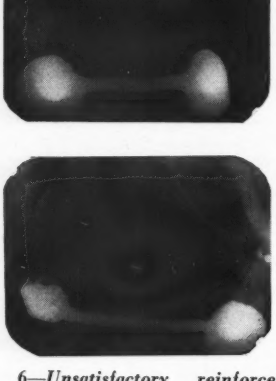


Fig. 6—Unsatisfactory reinforcement bars: Too straight; do not provide for pontic replacement in case of fracture.

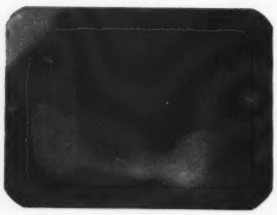


Fig. 7—Unsatisfactory reinforcement bar: Too thick and straight; will cause strain and result in poor color because of insufficient acrylic.

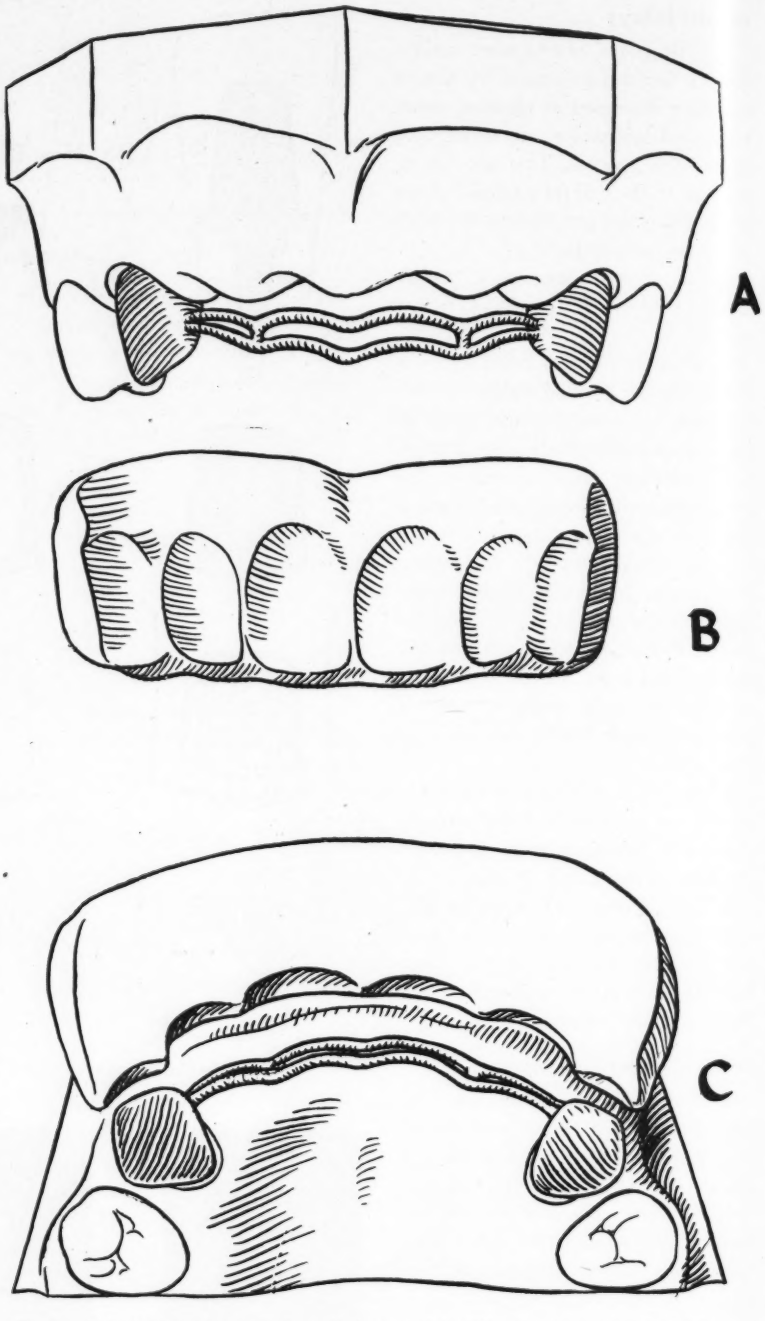


Fig. 8—(A) Gold copings fitted on dies on model; (B) plaster matrix of labial setup; (C) matrix in position on cast.

5. The purity of the color of the acrylic is lessened by the use of water glass and of colored bulbs in droppers, the accumulation of dust, the manipulation of acrylic with the fingers, and faulty processing.

6. Eliminate excessive shrinkage by digging a circular ditch near the invested pattern. Place excess acrylic into this reservoir; this will feed additional acrylic to the pattern when the mass shrinks at 160° F.

7. In processing raise the temperature by 2 degrees per minute from lukewarm to 160° F. Keep the temperature at 160° F. for an hour, and boil for an hour. Extreme hardness results, with a scratch test better than that of 22-karat gold.

8. Cool to 175° F., and bench cool. Finish the jacket on the die. Immerse in water until cementation. Roughen

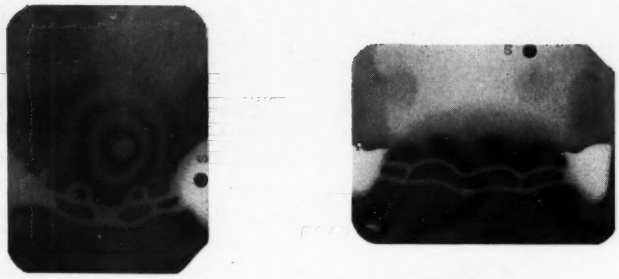


Fig. 9—Roentgenograms showing reinforcement frames.

the inside of the jacket. Clean with hydrogen peroxide, and cement with kryptex. Apply varnish at the cement line. Relieve the bite prior to cementation, and polish the opposing tooth to remove rough, sharp antagonists.

Repairs With Acrylic

Acrylics lend themselves well to repair. If a broken porcelain pontic cannot be replaced easily or quickly, a wax pontic can be carved, removed, and processed within a relatively short time. If the broken pontic is on a removable bridge, the problem is easier. Undercuts and retention areas are secured in the metal, and the pattern is carved and processed directly against the metal. If the saddle is of acrylic, either an acrylic tooth or a wax carving can be used to restore the broken part. Broken porcelain veneer crowns can be repaired by carving a new facing in wax, and casting and cementing it on, or by the use of the direct acrylic technique.[2]

Doctor Arthur B. Gabel, Professor of Operative Dentistry at the University of Pennsylvania, recently presented the following findings in his work on direct acrylic restorations: All classes of cavities but class II were restored. None of the restorations had fallen out after six months. Three were removed because of hyperemic pulps. Margins on all the restorations were good, and the color of the restorations was so well matched that students standing three feet away could not detect the restorations. Doctor Gabel limits the use of direct acrylic, however, to experimentation in the clinic.

Fixed Bridges

One of the best uses for acrylics is in fixed bridges. This phase of the use of acrylics, nevertheless, has taken as much abuse as has the acrylic inlay. Many beautiful bridges have failed because the basic principles involved were disregarded. Abutment crowns have cracked because of lack of reinforcement or because of poor reinforcement, and the pontics have split on supposedly unbreakable bridges because of unsatisfactory reinforcement bars (Figs. 5 and 6) and insufficient occlusal bulk to withstand stresses and strains set up during processing. The designs which I have adopted reduce breakage to the minimum. If breakage does occur, the pontic can be replaced easily without pulling off the whole bridge, a procedure which is time-consuming, embarrassing, and expensive.

In anterior bridges in which two or more teeth are missing, it is common to attach a stock bar, generally thick and irregular (Fig. 7), to the gold abutments. All this is covered with acrylic later. The bar usually interferes with the proper shade and contour, leaves an insufficient amount of acrylic thickness for safety lingually, and strains the entire restoration sufficiently to cause breakage of the bridge.

The same procedure is usually carried out in the posterior reconstructions. Inasmuch as stresses are greater there, the percentage of failures naturally rises in proportion. A few relatively safe designs are recommended to reduce breakage of fixed bridges.

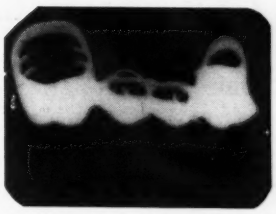


Fig. 11—Roentgenogram of bridge frame shown in Figure 10.

Anterior Bridges

Preparation of Teeth—1. The incisors are missing.

2. Both cuspids are prepared for jackets.

3. Copings of low-fusing metal are made, and an accurate plaster impression is taken of the area and adjacent teeth.

4. Dies are placed in the copings, and the model is articulated.

5. Gold copings are now cast and fitted on dies on the model.

Bridge Procedure—1. Select teeth of proper mold and thrust them properly against the gingiva of the model. Add wax instead of cutting the mold teeth wherever the contour can be improved. Wax the teeth together.

2. Lubricate the model and make a plaster or stone matrix of the labial setup (Fig. 8).

3. Remove the labial matrix, take off the teeth, and replace the matrix.

4. With proper thickness of contour clearly shown, two wax wires are bent, following the curve of the labial and uniting at each thimble. Connect the wires at interproximal points of the laterals and centrals

[2]Salisbury, G. B.: Improved Direct Acrylic Restorations, THE DENTAL DIGEST, 50:356 (August) 1944.

Fig. 10—Posterior upper bridge frame showing gold occlusal, loops, and veneers.

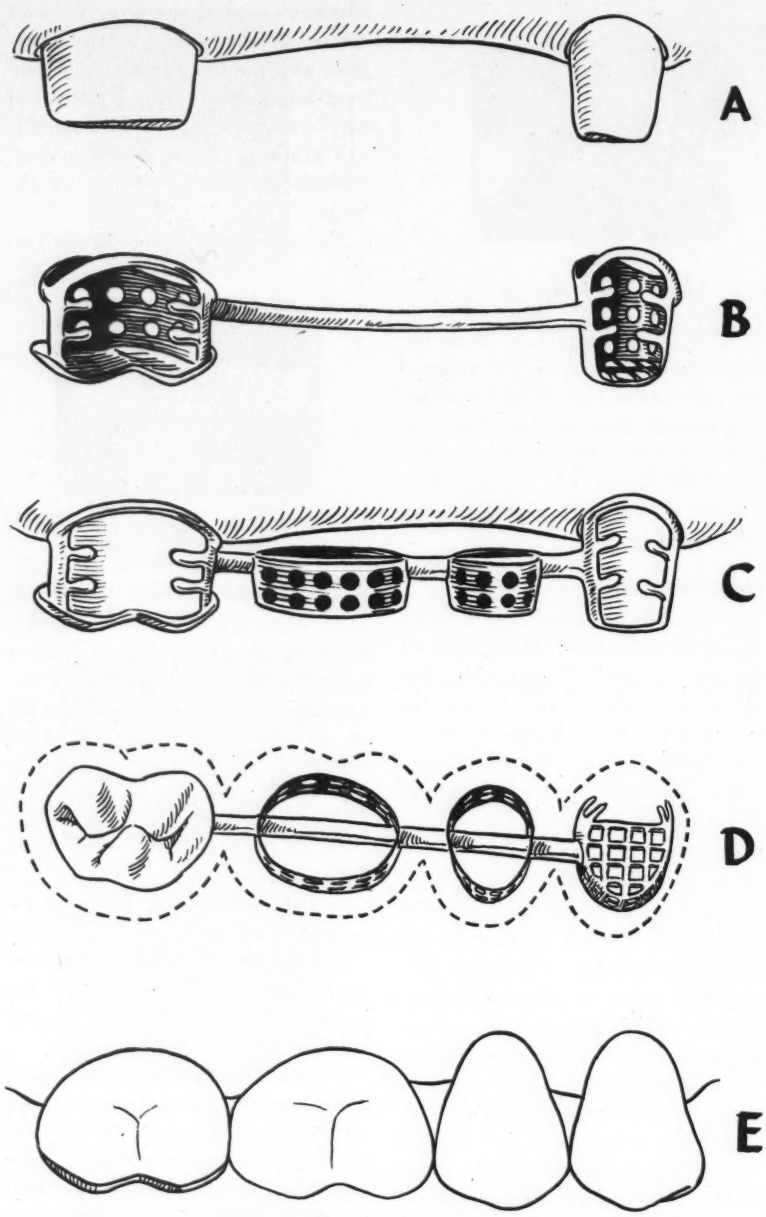


Fig. 12—Two veneer mesh crowns and individual pontics that can be replaced easily: (A) Upper posterior tooth preparations (abutments); (B) buccal view of crowns and reinforcement bar; (C) buccal view of individual pontics in place; (D) occlusal view of bridge frame; (E) buccal view of finished bridge.

(Fig. 8). The thinnest clasp should be of 18-gauge or 19-gauge wire. Wires should be so curved as to allow ample thickness of acrylic on each side and the least amount of stress (Fig. 9).

5. Remove the wax-up and cast it in hard gold.

6. Solder to the thimbles or copings, and try in the mouth.

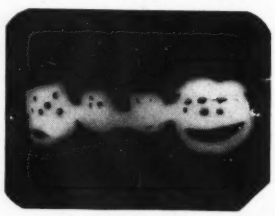


Fig. 13—Roentgenogram of bridge frame shown in Figure 12.

7. If only one try in the mouth is possible, make this when the wax-up is completed. This is done easily by holding the wet matrix against the model with the frame in place, and melting colorless wax into the space created. The lingual or palatal wax-up is then completed quickly. The case is chilled and removed.

8. If acrylic veneer or denture teeth are used in making the bridge, utilize them in the original wax-up and preparation of the matrix. In that case, in the final wax-up, replace veneers against the matrix, press the matrix into place, and melt wax in to complete the wax-up. Process from the palatal or lingual.

9. For better shading, it is best to cut out a labial window on each cuspid coping prior to the final wax-up. Apply an opaque protective over the wires and the gingival rim of the coping.

Posterior Upper Bridge

Preparation of Teeth—1. Two posterior teeth, the second bicuspid and the first molar, are missing.

2. The second molar and first bicuspid are prepared for gold crowns with acrylic veneers.

3. Wax up for full crowns. Cut out a buccal window in each and undercut the wax for retention. Two fingers of wax should extend from each proximal space as additional retention arms for about 3 millimeters.

4. Cast both crowns.

5. Try in the mouth and check for fit.

6. Take a plaster impression and a wax bite. Replace the crowns on dies on the articulated model.

Bridge Procedure—1. Select the necessary occlusals on the die plate. Melt inlay wax into the depressions. Chill. Remove occlusal forms and wax them up to the crowns to produce a gold chewing edge for the bridge later. Add several fingers of wax to the surface facing the gingiva to act as retention for acrylic. Run a double loop of thin wax wires midway between the gingiva and the occlusal edge. Unite the wires at each abutment end and at the interproximal point between the missing teeth.

Now remove and cast. Return and solder to the abutments (Figs. 10 and 11).

2. Wax up the pontics and the veneers on the abutment crowns in colorless wax.

3. Remove from the model and invest.

4. Process.

Variation of Procedure—A variation of this can be a thimble of Williams mesh cast in hard gold on the bicuspid, a veneer on the molar, and the pontics made over mesh tubes (Figs. 12 and 13). This makes a bridge more esthetically satisfactory where gold must be eliminated completely. If breakage occurs, the individual tubes can be shaped easily into jacket abutments and a separate jacket replacement can be made without removal of the bridge.

1. Connect the abutments with a flattened wire near the gingiva of the model. It should be about 3 millimeters wide. Wrap Williams mesh around two old root canal reamer handles to form a tube on each. Cut off the excess to obtain proper height. Place them on the flattened wax wire to form individual perforated pontics. Wax them up so as to reinforce them for strength. Remove and cast.

2. Solder the entire casting to the abutments which have already been tried in the mouth, fitted, adjusted, and rearticulated on new impressions.

3. Wax up and process.

If breakage occurs, the perforated tubes will hold the acrylic and will present an easy preparation for a fast shaping-up into an individual jacket preparation.

Lower Posterior Jacket Crown or Inlay

If a lower posterior tooth is missing, the abutment teeth are prepared for crowns if they are badly broken down, or are prepared for inlays if they are sound.

1. If crowns are to be used, wax up Williams mesh over the tooth preparations (Fig. 14), add a little extra wax around the gingival collar. Remove, and cast. Try both in the mouth.

2. Take impressions; rearticulate.

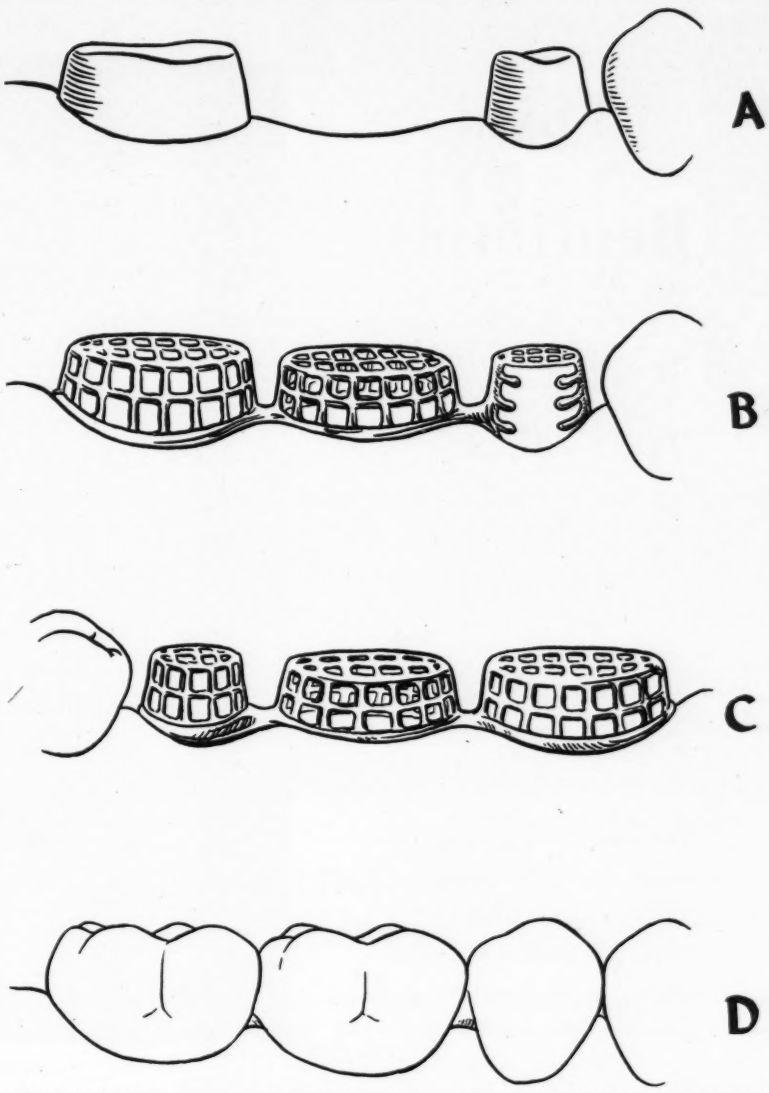


Fig. 14—(A) Lower posterior tooth preparations; (B) buccal view of mesh thimbles and mesh pontic; (C) lingual view; (D) finished restoration.

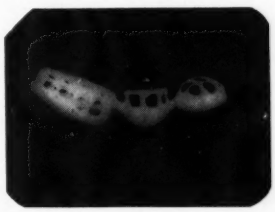


Fig. 15—Roentgenogram of bridge frame shown in Figure 14.

3. Wax up the saddle between the abutments to cover only the area of the pontic.

4. Build a mesh tube over this as described before (Fig. 14), and cast the reinforcement.

5. Solder to the pontics, wax up, and process.

No gold is visible, which is an improvement over many other designs. If the gold under the acrylics is not polished, it will not refract light and will not alter the shade. Polishing will likewise spoil adhesion of acrylic mass to the metal, and will increase strains. If either the abutment or the pontic splits, it will be easy to shape up either for an individual jacket replacement without destroying the bridge (Fig. 15).

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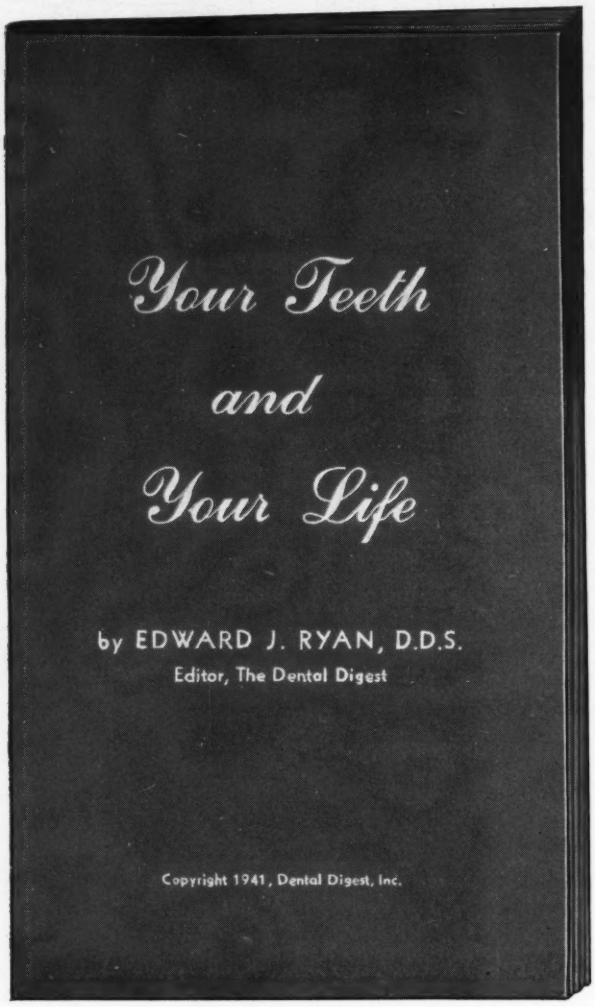

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The steadily increasing demand for this pamphlet, YOUR TEETH AND YOUR LIFE, has made it necessary for us to have another reprinting—*the third.*

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Here's an excerpt from a letter we have just received from a practitioner who has been using the pamphlet for some time: "I am enclosing check for $9.00 for 300 copies of Your Teeth and Your Life. I surely hope you have some left as I have been selling a lot of dentistry with this material which I have been using for some years."

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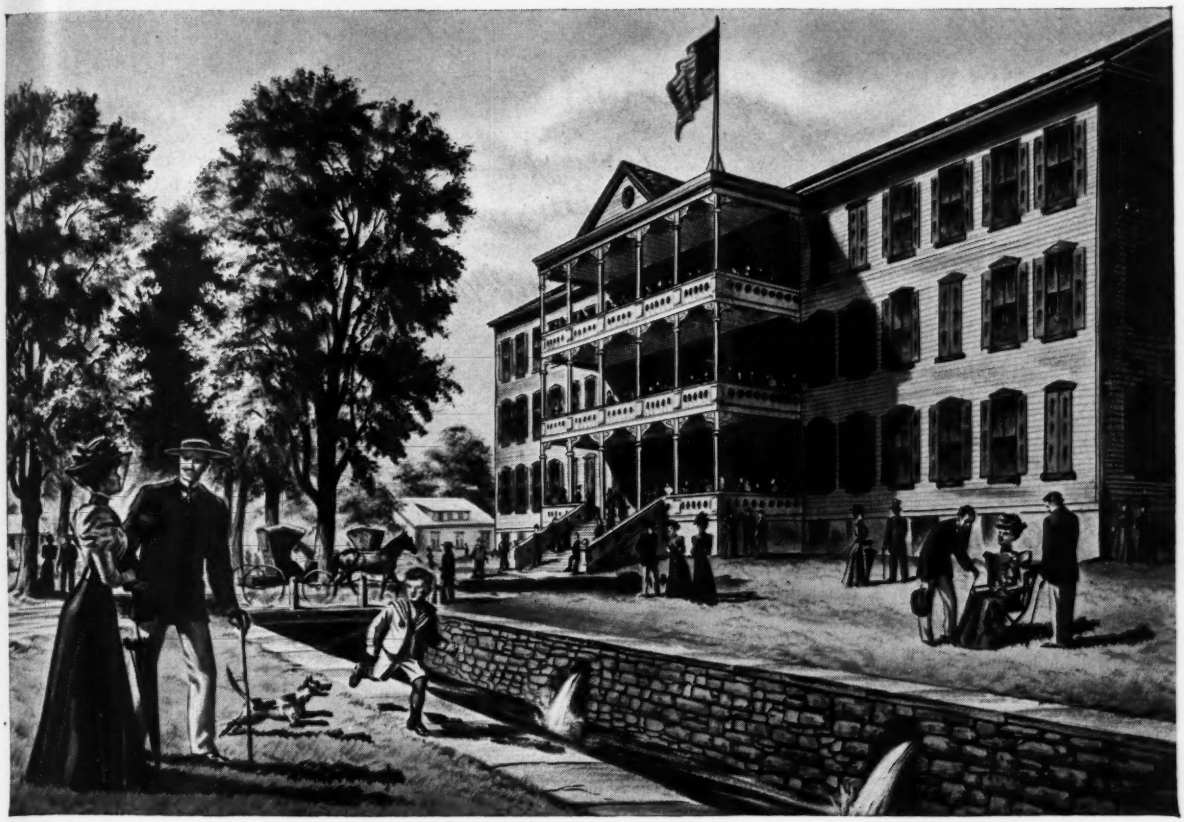

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This is No Time for Intolerance . . .

One of the most forthright men in American public life is Eric A. Johnston, President of the Chamber of Commerce of the United States. Although he is the spokesman for business, he cannot be called an apologist for capitalism. Mr. Johnston sees the world clearly and expresses himself courageously and lucidly. He is not an ax grinder. When he speaks on any subject, the note of sincerity is prominent and his vigor is fully apparent.

Recently Mr. Johnston spoke out before the Writers' War Board on the subject of intolerance. His speech is in happy contrast to some of the current articles in the dental press that have expressed an attitude of intolerance. It is an interesting study to read the writings of Harlan H. Horner, the Secretary of the Council on Dental Education of the American Dental Association, then to switch to the words of Mr. Johnston. Writing in the *Journal of the American College of Dentists*,[1] Doctor Horner has this to say:

"A large percentage of the dental students resident in New York City and in Chicago and their environs are of foreign-born or near foreign-born parentage and are largely restricted to two racial groups. These students are greatly moved by the desire of their parents to see them established in 'white-collar' work and they seek admission to dental study in numbers far exceeding the ratio the population of their racial groups bears to the total population."

Putting down the *Journal of the American College of Dentists*, and

[1]Horner, H. H.: Distribution of Dental Students, The Journal Forum, J.Am.Col.D., 11:327-330 (December) 1944.

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picking up the stimulating article by Mr. Johnston:[2] "I have been privileged to travel widely in our country, and I do not hesitate to offer my personal testimony that the tremendous tension of race and group animosities is warping the very foundations of American democratic life. Men and women who should know better—who do know better—allow themselves to mouth the catch phrases of anti-Semitism and antiforeignism, of antibusiness, or antilabor, antifarm. Most of them are not themselves aware that they have been infected by the virus of intolerance which already has the whole world writhing in the fatal fever of war."

Back again to Horner: "If the dental profession is to be truly representative of our citizenry as a whole, then it would seem that serious consideration should be given to the growing geographical and racial imbalance already marked in the enrollment in the dental schools. Moreover, the imbalance between city bred and reared students and rural bred and reared students gives concern in many quarters. How can this problem be met equitably and fairly in our American way?"

And here is what Mr. Johnston says on this same general subject:

"Viewed from the narrowest vantage point of the nation's well-being, quite aside from human and moral considerations, the growth of doctrines of race and group hatreds represents a major economic threat. America has prospered because it has provided avenues of economic expression to all men who had the urge and the capacity to advance themselves. Wherever we erect barriers on the grounds of race or religion, or of occupational or professional status, we hamper the fullest expansion of our economic society. Intolerance is destructive. Prejudice produces no wealth. Discrimination is a fool's economy.

"Freedom of the individual is the most vital condition for creative life in economy as in every other department of human existence. Such

[2]Johnston, E. A.: Intolerance, Address before The Writers' War Board, New York, January 11, 1945.

In your ORAL HYGIENE this month

Dental officer freed from Jap prison camp

After three years in Bilibid and Cabanatuan prison camps, Lieutenant Emmet Manson, DC, United States Navy, is back home in Worthington, Minnesota. In an exclusive interview for ORAL HYGIENE, Lieutenant Manson tells of being wounded at Corregidor, of being captured by the Japanese, of working in labor battalions, of giving dental treatment to fellow prisoners and Japanese guards, of living on rotten fish and rice, and of finally being rescued during the daring invasion of the Philippines. No dentist will want to miss this story of a fellow dentist as told to Al Goff, editor of *The Worthington Daily Globe*, who wrote it for ORAL HYGIENE . . . Page 622.

★ ★ ★

"Philosophical Fillings? — Bah!" . . . is Doctor Seth W. Shields' comment on the much discussed "Hatch paper" . . . Whether you side with Doctor Hatch or with Doctor Shields, you will want to read this terse, biting article on the subject of dental education . . . on page 610.

★ ★ ★

"You're Next on the Program" . . . tells how to give a speech without getting spaghetti knees and butterfly stomach. Preparation of the speech is explained step-by-step, as is the technique of presentation . . . Can *you* explain—without tools and models in your hands? If you can't, take the advice of Maude Spence Holway, D.D.S., who gives you all of the "secrets" of the successful speakers . . . Page 615.

★ ★ ★

"Dental Officers Perfect Plastic Eye at Valley Forge Hospital" . . . Yes, the dental profession can be very proud of the work done by dental officers in perfecting the all-plastic eye—an eye that moves in synchronization with the natural eye! Don Fairbairn told the story in *The Philadelphia Evening Bulletin*. It is reprinted in ORAL HYGIENE by special permission . . . Page 618.

★ ★ ★

"Home Talent Dental Programs" are as well attended as prewar "lecture" meetings, in Cincinnati. Doctor Herbert G. Frankel tells how any dental society can organize interesting local discussion meetings to take the place of conventions during wartime.

★ ★ ★

"Group Practice is the First Step" . . . says Doctor Julius Jaffe in his article on page 631 . . . "It is only by moving forward with the times that we, as dentists, can keep the initiative of the future of our profession in our hands."

★ ★ ★

"General Practice is Good Enough for Me" . . . tells why *not* to be a specialist . . . Doctor S. J. Levy likes the variety of work encountered in general practice and does not envy the dentist who does one type of work day in and day out. There are many dentists who heartily agree with the ideas expressed in his article on page 636.

★ ★ ★

In addition to these seven articles, you will find all of your favorite departments, and a special page reprinted from *The Journal of the Canadian Dental Association*, "Rules for Dental Practice"—giving 23 ways to avoid practice-management pitfalls.

★ ★ ★

IMPORTANT! Whatever else you skip in reading the April issue of ORAL HYGIENE, don't miss the editorial on page 638. "Racial imbalance" in dental schools is a subject which most editors would willingly sidestep. Not so Doctor Ryan: he discusses this explosive topic rationally and realistically—and in very plain words.

freedom is impossible where men are restricted by reason of race or origin, on the one hand, or on the other, paralyzed by fears and hatreds of their neighbors.

"There are some in our country—industrialists, white-collar workers, laboring people—who hold to the myth that economic progress can be attained on the principle of an unbalanced seesaw. They think that if some groups can be forever held *down*, the others will forever enjoy economic privileges and prosperity at the end which is up.

"Fortunately it does not work that way. Any advantage thus gained must be paid for out of the fruits of the productive plant. The withholding of jobs and business opportunities from some people does not make more jobs and business opportunities for others. Such a policy merely tends to drag down the whole economic level. You can't sell an electric refrigerator to a family that can't afford electricity. Perpetuating poverty for some merely guarantees stagnation for all. True economic progress demands that the whole nation move forward at the same time. It demands that all artificial barriers erected by ignorance and intolerance be removed. To put it in the simplest terms, we are all in business together. Intolerance is a species of boycott and any business or job boycott is a cancer in the economic body of the nation. I repeat: Intolerance is destructive. Prejudice produces no wealth. Discrimination is a fool's economy."

A refreshing note expressed by Dean Willard C. Fleming of the College of Dentistry of the University of California on the same subject of racial imbalances should be included in this discussion:[3]

"Regardless of our American tradition, racial discrimination is practiced, but it would seem that the very last place it should occur is in the field of science and the health profession. The only discrimination that

(*Continued on page* 214)

[3]Fleming, W. C.: Distribution of Dental Students. The Journal Forum, J.Am.Col.D., **11**:330-333 (December) 1944.

(Illustration approximately one-half actual size)

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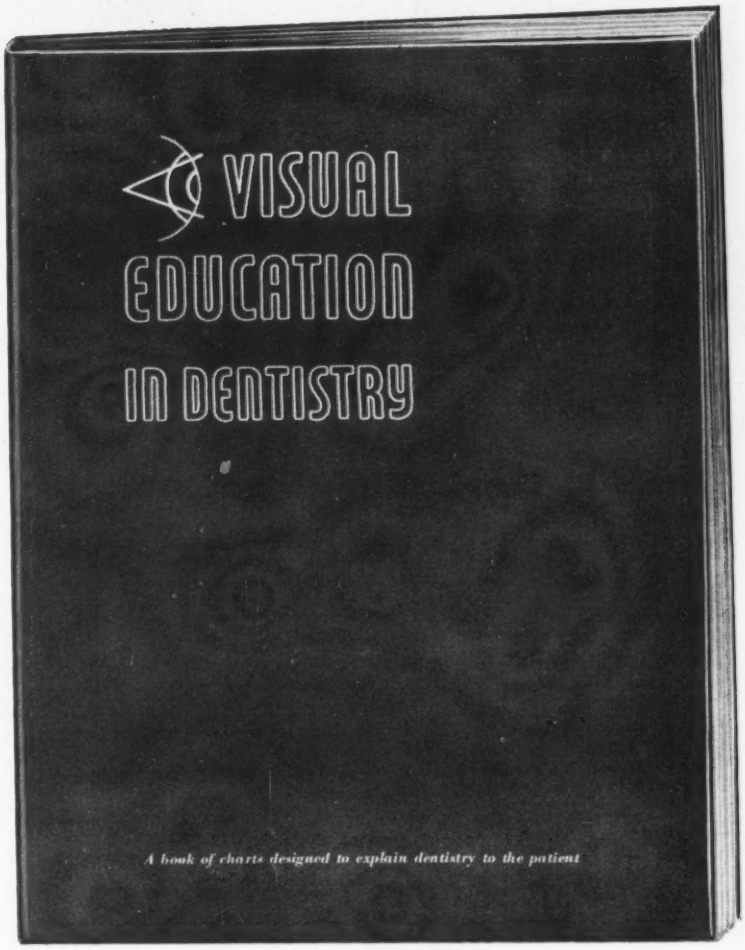

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(*Continued from page* 208)

can be allowed in the selection of students is that of their qualifications to study and practice dentistry, and this selection must be applied regardless of race or color. . . .

"In brief, the point is made to place the admission of students not on the basis of race or color but on the possession of intelligence, integrity, honesty, willingness to work, interest, and digital skill—the qualities and abilities we need in our young students, if they are to be capable of developing as members of our profession. There is no evidence to lead one to believe these qualities are the sole property of one race or group. Lacking these qualities, Doctor Smith on Main Street is just as poor a dentist as Doctor Cohen on Broadway, or Doctor Milovsky, wherever he may be."

All of us must choose which principle we will accept—the broad, understanding expressions of Mr. Johnston and Dean Fleming, or the circumscribed, dangerous suggestions made by Doctor Horner. In the matter of tolerance we cannot sit on the fence and be neutral. We are either strongly and bravely for tolerance, or we are enemies of freedom. In passive silence we carry the label of intolerance.

In the Name of Research . . .

There is a group of dentists who hang the word "research" on any little project that may stimulate their current fancy. Every short cut in dental practice and every shiny gadget that has been developed carries the important and ponderous-sounding word "research." Research really means critical and exhaustive

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investigative experimentation. The expression implies scholarship and a contribution to the sum total of human knowledge. To announce that amalgam is better condensed by a heart-shaped instrument than by an instrument of some other shape does not represent the product of research. To decide that wax can be melted better by dry heat than by moist heat is not research. These are observations, maybe of practical value and maybe not, but they are certainly not significant contributions to knowledge.

Dentistry can stand a little more scholarship and more genuine research. We have, however, a plethora of high-sounding societies and glittering emblems that carry the ostentation of scholarship but none of the substantialness of learning.

What Did Your Doctor Say? . . .

We won't go far wrong if we discount *everything* a patient says about the diagnoses and treatments that he has received from other dentists. We have all heard strange accounts of mysterious treatments used by our colleagues. The people who tell these stories are not often deliberate liars. They are inaccurate and poor reporters and interpreters. They contribute to and suffer from communication failures.

A psychiatrist from Yale, Doctor Frederick C. Redlich, has conducted a survey to find out what the average person knows about medical phraseology. Here, according to *Newsweek*, are some typical answers:[4]

"SPINE: 'A bone, way down your back.'

"SPINAL FLUID: 'Pus that comes out of the spine.'

"INFECTION: 'Blood poisoning, skin wounds cause it.'

"TUBERCULOSIS: 'A disease of chest and throat with spitting.'

"SYPHILIS: 'An incurable disease . . . caused by unlawful relations.'

"PROGNOSIS: 'Everything is going to be all right.'

"NERVE: 'You have to have them, they keep you excited.'

(*Continued on page 218*)

[4]What Did the Doctor Say? Medicine, Newsweek, page 82 (February 19) 1945.

(*Continued from page 216*)

"TUMOR: 'A bump . . . caused by a blow.'

"ORGANIC: 'Disease of the organs, not curable.'

"FUNCTIONAL: 'Parts of the body that operate in a normal manner.'

"PSYCHOGENIC: 'A person who knows about genital organs.'

"MIND: 'Everything in your head.'

"SOUL: 'The beautiful thoughts of your mind.'

"MORON: 'A person who does not believe in God.'

"Most of the patients said their medical knowledge came from discussing their cases with other sick laymen. Twelve of the twenty-five thought they had learned about medicine from their doctors. Ten listed the radio and books as sources. Only one admitted that he had gained medical knowledge in school.

"Redlich's conclusion: 'The ignorance and the confusion as regards medical terms make one wonder whether our system of education fulfills its function of teaching the population certain minimal requirements regarding health and disease. An investigation of this topic might . . . become the basis for certain changes in the teaching of hygiene.'"

In dentistry we add our share to "semantic confusion." We talk about skeletons, saddles, and synthetics, for example. These are terms that are neither elevating nor accurate. They tend to confuse the patient and to make him understand less about dentistry. Who wants a skeleton or a saddle in his mouth? Who wants a synthetic in his tooth that has been prepared with a hatchet and a chisel? Who wants his gums frozen preparatory to the use of an elevator in his mouth?

There is considerable discussion at present about semantics, which is concerned with the science of meaning. According to Korzybski[5] the term "semantics" is derived from the Greek word *semantikos*, which means "to signify, to mean." It is important that the speech in dentistry, the words and terms used, have

[5]Korzybski, Alfred: Science and Sanity, ed. 2, Lancaster, Pennsylvania, International Non-Aristotelian Library, 1941, vol. 1, page 19.

exact meaning and significance to the patient. Jargon is for speech among dentists. It has no place in speech to the patient. Some of the unpleasantness and some of the misunderstandings could be removed from dental practice if we were more select in the language that we use to announce diagnoses and treatment plans.

It is well to remember what Bentham said: "Error is never so difficult to be destroyed as when it has its root in language."

"A Chicken in Every Pot; a Quart of Milk a Day for Everybody" . . .

These are slogans. Sober agricultural economists did not coin them; they came from politicians. They give people a false sense of the future world. They are not true to life facts. An agricultural scientist, writing of these grandiose plans for improving the food for all the people of the world, has deflated the hot air of the global politicians. Here is what Professor F. A. Harper of Cornell University says on the subject:[6]

"Why not, it is suggested, improve the world's diet by shifting production from the less well liked and less nutritious starchy foods to the desired foods of animal origin? If this were to be done, it would result in widespread starvation—the extent depending on how far the shift was carried. The world's food-producing animals, taken together, probably require eight or more calories of feed to produce one calorie of human food in the form of meat, milk, and eggs. Some animals, of course, are more efficient than others; the dairy cow ranks high provided we do not throw away the skim milk. Livestock are fed partly on grain that humans could eat, and partly on roughage that humans cannot utilize. But this roughage is to a large extent produced on land that could be used to produce crops useful for direct human consumption. The meats and animal products are expensive, relative to the starchy foods. They take so much land and labor

[6]Harper, F. A.: Improving the World's Diet a Tremendous Problem, Certified Milk, **20**:3 (February) 1945.

in their production that they are economically out of reach for most of the world's people. This is not to deny that they are delectable and good for us, but only a few people, in the United States and elsewhere, can afford much of them because of the cost and effort required in their production. . . .

"Milk from a variety of animals —cows, buffalo, goats, sheep, camels —is produced all over the world. Part of it is used to produce butter, ghee, and the skim milk fed to livestock. Even though all the milk produced were consumed by humans as whole milk, we would have to increase the world milk production about three times to attain the amount needed for a quart per person daily.

"Where would we get the feed for that additional milk production? It would require the equivalent of enough grain to feed the entire world on a grain diet—a world already living on a diet little above the starvation level. The dairy cow is high among animals in efficiency, yet it requires 23 times as long to produce a pound of food (Dry basis, United States average) in the form of milk as in the form of soybeans; comparable figures for wheat and corn are 15 and 11. As desirable as is the quart of milk a day, we are not likely to let hundreds of millions of people starve in order that the remainder may attain that desirable objective.

"There is still the alternative of meeting the goal by increasing total world agricultural production. This involves either (1) increased production from present acreage, or (2) expanded acreage. There are too many angles of these problems for full discussion here but, very briefly, prospects are not too promising. A careful study of known evidence on climate, soil, and topography around the world reveals no large areas adapted to agricultural production that are not now being used. More than nine-tenths of the earth's land surface is barren waste, or otherwise of no use for farming. The world's intellectuals, living in the few garden spots of the world like western Europe and parts of the United States, instinctively overestimate the food-producing capacity of the world."

Because dental caries is related to nutrition, it is well for us dentists to differentiate between the political sloganeers and the well considered words of the agricultral scientists. With the global planners in Washington anxious to give away the food supplies of the United States and let our own people suffer, it would be well for qualified scientists to point out from time to time that lack of animal protein (meat, dairy products, eggs) may increase the incidence of all diseases in the United States. A public health program should begin at home with adequate food for our own people.

Many of the well fed, well clothed, well housed people in Washington should return their glances to the "common man" in the United States and to his family. If we need a slogan, it might be: "Food for Americans First."—E. J. R.

DENTAL MEETING Dates

Ohio State Board of Dental Examiners, regular meeting, Western Reserve University, Cleveland, May 21-23; Ohio State University, College of Dentistry, Columbus, June 4-6. All applications must be in the hands of the secretary at least ten days prior to examination. For information write to Doctor Earl D. Lowry, 79 East State Street, Columbus.

•

California State Board of Dental Examiners, regular meeting, Los Angeles June 4, and in San Francisco at Physicians & Surgeons College of Dentistry on Aug. 6. For information, write to Doctor Kenneth I. Nesbitt, 515 Van Ness Ave., San Francisco.

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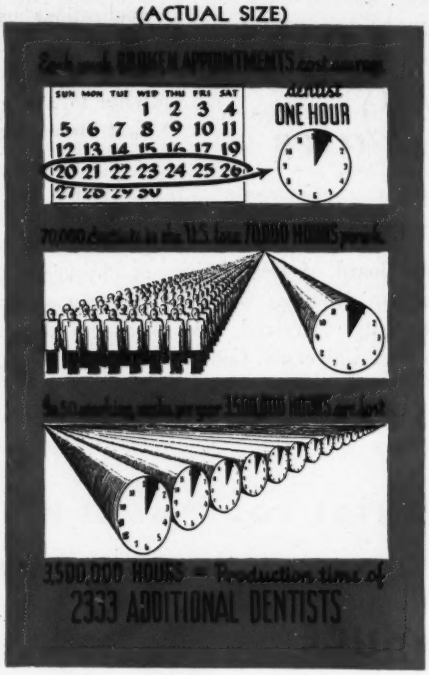

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